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AUTHOR Briere, Eugene J.
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ABSTRACT

This is an interpretive manual designed to accompany the Test of Proficiency in English as a Second Language, a comprehensive test assessing production and perception skills in written and spoken English and intended for use in Grades 4-6 in Bureau of Indian Affairs schools. The manual is divided into three sections. Section one discusses English proficiency and the ways in which information from test results is best incorporated into decisions affecting individuals and Groups. Section two contains the information about TOPESL, TOPESL scores, and the norms population necessary for interpretation of scores and differences between scores. Section three contains detailed information about the development of TOPESL, and about the development of statistical information for TOPESL. Statistical data are presented in tables, and appendices list participating schools. (Author/AM)

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INTERPRETIVE MANUAL

for

TEST OF PROFICIENCY IN ESL

Eugène J. Brière

University of Southern California

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Materials Production:

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Test Item Construction and Administration of Experimental Test Forms:

Betty Anderson; Carolyn Berkenkamp; Diana Chastain; Susan Narizny; and Francis Smolinski.

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Introduction

The Test of Proficiency in English as a Second Language (TOPESL) is a comprehensive test assessing skills in the production and perception of written and spoken English intended for use in grades four, five and six. The test is designed for use in Bureau of Indian Affairs' schools. It consists of three separately administered sections, English Structure (ES), Listening Comprehension (LC) and Oral Production (OP). Accompanying the test itself are a separate administrative manual and this interpretive manual. The administrative manual gives detailed information about the administration and scoring of TOPESL. This interpretive manual is divided into three sections. Section I contains a discussion of English proficiency and provides a discussion of the ways in which information from test results is best incorporated into decisions affecting individuals and groups. Section II contains the information about TOPESL, TOPESL scores, and the norms population, which is necessary for interpretation of scores and differences between scores. Section III contains detailed information about the development of TOPESL, and about developing statistical information for TOPESL.

For TOPESL as with any standard test, familiarity with basic testing concepts is a necessary qualification for the interpretation of scores.* Persons not familiar with the theoretical and practical limitations on the accuracy of test scores, tend to give too much significance to any obtained score. As will be noted repeatedly below, there is a margin of error in the use of any test results which cannot be ignored. For this reason, other pertinent information should be used in conjunction with test scores wherever possible. It should be noted, however, that although there is a non-negligible margin of error present in measurement with standardized tests, this margin is far smaller than it is for most other forms of assessing human performance.

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*Persons interested in obtaining additional information on these "basic testing concepts" should refer to texts such as: Lee J. Cronbach. Essentials of Psychological Testing (2nd edition), Harper & Row, 1960; Robert L. Ebel. Measuring Educational Achievement, Prentice-Hall, Inc., 1965; Henry E. Garrett. Statistics in Psychology and Education (5th edition), Longmans, Green and Co., 1961; David P. Harris. Testing English as a Second Language, McGraw-Hill Book Co., 1969. In addition, some extremely useful information on testing can be found in the test packet containing a series of brochures available free from the Educational Testing Service, Princeton, New Jersey. (An exceptionally useful brochure in the ETS packet is number 1, Locating Information on Educational Measurement: Sources and References which contains an annotated bibliography.)

SECTION I

English Proficiency

There are many kinds of skills that are frequently classified together under the broad heading "English." These include writing, spelling, punctuation, phonics, reading, and correct usage, among others. These are typically the aspects of the use of language which must be taught to children who have learned English at home as their first language. They are skills dealing for the most part with written standard English and the correspondences between the spoken and written forms of the language. These writing conventions are not the aspects of English with which TOPESL is primarily concerned. TOPESL is concerned with the knowledge of English structure, the way words go together to form sentences in English. It is thus not concerned with where commas go, or the distinction between "lie" an and "lay," or whether "English" should be capitalized. Rather, it is concerned with knowing, for example, that the answer to a "what" question is usually a noun phrase and not "yes" or "no."

Purpose

The scores from these tests are intended to provide users with both placement and group diagnostic information. The information provided by the test should be considered an adjunct to the teachers' knowledge and not a replacement for it. Where in individual cases, interpretations of test scores yield conclusions greatly at variance with teachers' judgments, extenuating circumstances should be sought. Perhaps the child marked in the wrong section of the answer sheet, or was ill or worried about personal problems.

Though TOPESL scores come from students' performance in three basic areas requiring a broad knowledge of English, TOPESL does not provide an exhaustive sampling of all aspects of English proficiency. Though vocabulary is doubtless an element in language proficiency, there is no specific vocabulary section to TOPESL. Similarly, though pronunciation is a noticeable aspect of spoken language, no attempt is made to assess this in TOPESL. These areas, though not assessed by TOPESL sections, are none the less important in overall language proficiency. Further, pronunciation assessment routines were not included in TOPESL because: (1) judging pronunciation deviations from standard English dialects is frequently extremely difficult for people who have not had specific training in phonetics and (2) "mispronounced" grammatically correct utterances seem to be less of a problem in communication than the respective statuses of encoder and decoder, situational context and the like.

Decision Making with Tests

Information from tests has no intrinsic value; it is useful only as an aid in decision making. For test results to be best utilized, they should be part of the total input to a decision rule. A decision rule is the process of choosing the kinds of information to be used, determining the relative value to be assigned to each kind of information, and finally specifying what is to be done with the information. The advantage of decision rules is that they explicitly state what weight or value is to be assigned to each of the types of available information. Decision rules can be formulated to operate with a minimum of information, e.g., taking every person over eight years of age would be such a rule which could operate with minimal information. With increased amounts of information available more complex decision formulae are useful. For example, in a given school where two levels of instruction in English structure are available to students from three classrooms, a hypothetical rule might be as follows: Add together the standard score from each of the sections of TOPESL and divide by 100. Add 4 points for an A, 2 points for a B, and 1 point for a C grade in English the previous year. Subtract one half point for each year in school. Give non-readers two points. Then exempt the top third from any English structure courses, put the second third in the upper level, and the last third in the lower level of English structure. This rule is not offerred as a suggestion for actual use, but only to illustrate the statement of such a rule. Any actual rule must take into account local considerations, such as number of special classes available, consistency in grading, etc. Should a decision formula give what seem to be incorrect results, the kinds of information put in or the relative weight of the categories of information should be changed.

The decisions using test results can be classified in several ways with respect to: (1) who makes the decisions--teachers, education specialists, principals or supervisors; (2) where the decisions are made--in the classroom, in the school, or in the district; or (3) who is affected by the decisions--individuals or groups. Decisions involving individuals are usually made at the local level and involve placement, diagnosis of problems, and determination of whether individuals are performing to potential. Poor knowledge of English may be responsible for performance below potential or under-achievement. Decisions affecting groups may be local or non-local and involve deciding the number of courses needed, how much time should be devoted in the curriculum, grouping strategies, the evaluation of programs and so on.

Decisions affecting groups are in one sense simpler to make. Any testing instrument makes some misclassifications and, as discussed in greater detail below, these are quantified by the standard error of measurement. Since the misclassifications in general are normally distributed, with sizeable groups they tend to cancel each other out. Because of this tendency, there need be less concern with error of measurement in decisions affecting

groups than in decisions affecting individuals. Let us consider first, local decisions about groups, then non-local decisions about groups, and finally decisions about individuals.

Locally-made decisions involving groups can be further separated to within classroom and within school. The within school decisions (usually made by language arts specialists and principals in consultation with teachers) involve determining how many levels of English instruction are necessary, how much time should be devoted to it and what strategies should be followed for grouping. Various grouping strategies might be to put together in the same classes, people of the same interest level, or the same cognitive level, or the same level in knowledge of English. Other information would be necessary for implementing interest level or cognitive level grouping, but TOPESL scores along with other information about English proficiency would serve to group individuals according to their ability level in English.

Much the same kinds of considerations are involved in the within-classroom decisions made by the classroom teacher. If the school curriculum is not departmentalized, all the groups established will be taught by the same teacher, but the same criteria apply to making the decisions.

Non-local decisions by supervisors and curriculum planners will determine how much of the curriculum should be devoted to the study of English structure and the extent to which teacher training should emphasize the teaching of English. Included will be the extent to which English specialists need to be assigned to larger schools and available to smaller ones. Additional use of test information at the administrative level will include the evaluation of effectiveness of different English programs at various schools. This will entail establishing regular testing programs, and specific procedures to evaluate results obtained from them.

Decisions involving individuals will almost always be made within the classroom or the school. Here, because the unit of focus is the individual rather than a group, misclassifications or discrepancies between obtained and "correct" or "true" scores cannot cancel out. The standard error of measurement (SE_m) thus becomes of greater importance. By chance, a person with any given true score will have an obtained score differing from his true score by more than one SE_m about one in three times, and by more than two SE_m about one in twenty times. On the test of English structure, where the SE_m is 4.6 in raw score units, in general one out of three persons with a true score of 35 would get an obtained score higher than 39 or lower than 31. Because of this uncertainty in individual score assignment, which is present in any test, care must be exercised in use of scores in individual placement. To facilitate use of the SE_m, Section II reports the data for various grades in the usual percentiles and, also in intervals or bands two SE_m wide.

Because of the range of error in individual score assignment, all available and pertinent information in addition to test scores should be included in the placement-decision formulae, such as, previous grades, teacher evaluations, scores on standardized tests, etc. Where three or more independent sources of information are available, errors in score assignment to individuals will tend to cancel out.

SECTION II

Section I of this interpretive manual provided a statement of test purposes and considers the use of test results in decision making. Section II provides a brief discussion of TOPESL and the information necessary to interpret raw scores. This information includes: reliability information--how consistent the test is in its score assignments to individuals; error of measurement data--with what degree of confidence an individual's score can be expected to fall in a given interval; validity information--what evidence there is that the test will actually accomplish the purposes for which it was designed; recommended uses of TOPESL scores; use of norms tables--how the performance of given classes of pupils is distributed; and a description of the population on which the norms were based. TOPESL consists of three basic types of testing instruments: (1) a written test of English structures; (2) a listening comprehension test; and (3) an oral production test.

There are two parallel forms of the written test, each of which contains sixty-two multiple choice items. One type consists of a question stem which can be answered with one of the choices; e.g., "What does Tommy read in class?" "(a) Yes, he does; (b) Likes books; (c) School books." The second type consists of an incomplete stem which can be completed with one of the choices, e.g., "The _____ in this room is awful." "(a) heat; (b) hot; (c) hotly."

The listening comprehension test consists of aural stimuli, recorded on tape, and three types of multiple choice responses: (a) choosing the correct picture of three which has been described on the tape; (b) identifying factual information which was actually given in a recorded conversation; and (c) using information contained in a recorded conversation in order to infer the correct choice.

The third part of the test battery consists of an oral production test. In this test the student is shown several sets of pictures--each set containing four pictures. Each picture in each of the sets varies slightly from the others along some criterial attribute. The student is then shown a test picture which is identical to one of the four in the set. Two responses are required of the student. First he must point to the picture in the set which matches the test picture. Then he must tell the examiner how that particular picture differs from the others in the set.

In order to aid teachers in evaluating the children's oral responses, and to standardize evaluation throughout all of the schools, a correction matrix was designed, (see Table A). On the far left hand side of the matrix is a series of grammatical categories. Each category represents a structure elicited by one of the sets of pictures. Seven require simple sentences and seven require complex sentences in order to describe the picture correctly, e.g., a simple response to one item is "The boys are washing their faces."

TABLE A
TEST OF PROFICIENCY IN ESL

SCORE SHEET

ORAL PRODUCTION TEST

SCHOOL: _____

GRADE: _____

DATE: _____

EXAMINER: _____

		Name					
1	Preposition		1	1	1	1	1
2	Subject + Verb		3	3	3	3	3
3	Subject - Object Differentiation: One boy - Another boy		2	2	2	2	2
4	Plural Pronoun Agreement: They - Their		4	4	4	4	4
5	Pronoun Gender Agreement: She - Her		3	3	3	3	3
6	Fluency		4	4	4	4	4
7	Present Progressive Tense: Be + ing		1	1	1	1	1
8	Article Presence: A / The		1	1	1	1	1
	Complexity		4	4	4	4	4
9	Plural Noun: Their Books		2	2	2	2	2
	Complexity		4	4	4	4	4
10	Count / Mass Noun: A Letter / Mail		2	2	2	2	2
	Complexity		4	4	4	4	4
11	Fluency		2	2	2	2	2
	Complexity		4	4	4	4	4
12	Present Progressive Tense: Be + ing		2	2	2	2	2
	Complexity		4	4	4	4	4
13	Verb Tense: Fall		2	2	2	2	2
	Complexity		4	4	4	4	4
14	Quantifier: Many / A Lot Of		4	4	4	4	4
	Complexity		3	3	3	3	3
		TOTAL SCORE :					

A response using a complex sentence, as in the second half of the oral production test is, "The girl is watching the children read their books." Along the rows opposite each category is a number from one to four which the teacher crosses out if the response is wrong or leaves alone if the answer is right. For each subject tested, the teacher simply adds the column of numbers beneath the child's name, which have not been crossed out.

The different grammatical categories are assigned numbers ranging from one to four because previous administrations and statistical analyses of the pre-tests showed that certain categories are more predictive of success or failure on the total test. The most predictive items are scored four points and so on down to the least predictive items which are scored one point only. All the teacher has to do is listen for one specific grammatical aspect, e.g., in item four plural pronoun agreement, and then allow or disallow the number of points for that category only. In other words, even if part of the child's response is grammatically incorrect, he still receives total credit if the part of the response being evaluated for that particular item is correct. For example, for item number five, where the category being evaluated is pronoun gender agreement, the response, "The girl are pointing to her mouth." would receive full credit, even though there is an error in number agreement.

The objectives of the test battery are threefold. The first is to identify the Amerindian child who needs special training in English versus the child who does not and to determine the placement of the former in the proper level of intensity of training in English. The second purpose is to provide the classroom teacher with specific linguistic information for each child in each language group which could be used as a diagnostic guide for teaching methods or materials. Potentially a third objective is to provide a means of assessing the relative merit of various English programs. These objectives require that certain decisions be made which can be classified as placement, diagnostic and evaluative decisions.

Reliability and Error of Measurement

For the test of English structure, two kinds of reliability information are reported, internal consistency estimates from item homogeneity (KR-20) and parallel forms correlation (Pearson product-moment). These are reported in Table 1. Since internal consistency of the test could be spuriously high due to the effects from speededness (see Table 15), the error of measurement for the English structure test has been computed on the basis of the parallel forms figure. Because the listening comprehension test is paced by the accompanying taped stimuli, the effects of speededness are negligible and internal consistency figures are appropriately used in estimating reliability and computing the error of measurement for it, as reported in Table 1.

For the oral production test, the use of internal consistency estimates from item homogeneity to determine reliability must be justified, because

TABLE 1

Reliabilities and SE_m's

Written Parallel Forms		r	N	M	SD
Form A	A-B	.89	251	34.2	13.7
Form B	B-A	.90	251	33.7	13.3
Combined		.895		34.0	13.5

Form A	KR-20	N	M	SD
Total Sample	.96	291	38.6	15.4
Choctaw	.97	38	31.5	17.4
Eskimo	.97	53	39.1	16.3
Hopi	.95	49	51.6	10.7
Navajo	.94	151	35.9	13.3

Form B	KR-20	N	M	SD
Total Sample	.95	281	38.6	14.2
Choctaw	.95	39	31.6	14.3
Eskimo	.94	51	38.6	13.2
Hopi	.90	46	52.9	7.8
Navajo	.94	145	35.9	13.0

LC	KR-20	N	M	SD	SE_m
Total Sample	.85	571	20.8	5.7	
Choctaw	.89	104	19.8	6.6	
Eskimo	.87	104	21.1	5.9	
Hopi	.82	94	24.4	4.4	
Navajo	.81	295	19.7	5.2	
All Tested 4,5,6		5,112	19.6	5.5	2.15

OP*	KR-20	N	M	SD	SE_m
Total Sample	.73	182	---	--	--
All Tested		1,660	43.5	11.5	5.85

*Numbers too small for breakdown by group.

the score on the oral production test is not simply the number of items correct, but rather is the sum of a set of weights given to the items. For a discussion of the weighting and the justification see Section III. It should be noted here that the SE_m reported in Table 1 is not exactly equal to $s\sqrt{1-r}$, but that it is sufficiently close to give an index for proper interpretation of scores for decisions involving individuals.

For all three sections of the test the SE_m used in computing the percentile bands is based on all four combined language groups. Where, because of differences in homogeneity in individual groups the size of the variance may be changed, the percentile bands may be somewhat more or less than two SE_m wide.

Validity

The three sections of TOPESL, English structure, listening comprehension and oral production are intended to include a sufficient cross-section of the basic skills involved in understanding and speaking English to provide content validity for TOPESL. Content validity is primarily obtained by having persons quite knowledgeable in the subject matter area cooperate in the selection of techniques and production of items, (see Section III for details on this aspect) but it is best demonstrated by showing how well the appropriate skills actually are sampled.

In the test of English structure, sentences and question reply exchanges are presented in written form and students must make judgments of grammaticality about them. The grammaticality judgments consist of picking which of the three alternatives corresponds most closely with standard English. Of 86 initial grammatical categories tried out, 28 remain after the item validation and selection procedures on the present 62 item test. The items are written so that no outside information about the content of the item is necessary because only one response is grammatically possible. In general, even though particular vocabulary items may be unknown it will still be possible to select the correct answer from grammatical considerations alone. Because the English structure items are presented in written form only, there is some confounding with reading ability.

While the emphasis in the English structure section is on the form of the language, the listening comprehension section emphasizes the content. The listening comprehension items require that a sentence or brief conversation be understood and an answer given which requires (1) recognizing a pictorial representation of that content, (2) recalling part of that content, or (3) making a simple inference on the basis of that content. The tasks of recognizing pictorial representation, recall and inference may be separate from comprehension of English, yet some response mode is necessary, and by coupling the comprehension task with three different response modes the effects of confounding from any particular task may be

reduced. Though the listening comprehension items are presented aurally, i.e., both the stem and choices, some minimal reading skill is required of pupils to determine which choice is being read and to mark their response on the answer sheet.

The oral production section requires the student to be able to express himself sufficiently in English to be able to distinguish one picture from three others to the satisfaction of the examiner and to use correctly the different grammatical categories being tested in specific items.

Construct validity for TOPESL is indicated in three ways, correlation with other measures which require language facility, through the inclusion of a subcriterion scale on the test of English structure, and through correlation of test results with amount of English contact as estimated by school administrators.

Two earlier forms of the test of English structure, used in item validation studies, PL I and PL II, correlated as shown in Table 2 with existing standardized tests, teacher grades, and teacher ratings. It should be noted that within each information type, teacher evaluations or standard test scores, PL I and PL II correlated quite highly with purer language measures than with arithmetic scores.

The subcriterion scale consists of 16 written test items which had a strong discrimination power with Amerindian children but did not with Anglos. Discrimination scores, expressed as "phi" [$\emptyset = (x^2/n)$], are measures of the degree to which each item differentiates "top" performers in terms of the total test scores. The higher the discrimination score for any given item the better the item separates high achievers from low achievers. See Section III for a full discussion of the development of the subcriterion scale and a listing of the subcriterion items. The subcriterion scale provided a basis for determining a validity index in item selection for the English structure test. The assumption involved in the use of the subcriterion scale is that items which do discriminate among persons learning English as a second language, but not among native speakers, are true measures of knowledge of English.

School administrators in each of the areas sampled for the norming administration of TOPESL were asked to evaluate the extent to which English was used outside of the school on the three point scale: (1) no English contact outside of school, (2) some, including access to television, (3) frequent English contact. No correlation between English contact and test scores were obtained for two language groups, Choctaw and Hopi, as there was no variation on that variable. However, data is available for 49 of the 54 schools tested. The significant positive correlation between English contact ratings and scores on TOPESL as reported in Table 3 would indicate that TOPESL does in fact measure English proficiency. Where English contact is higher, a generally higher level of English proficiency can be expected, and the positive correlations indicate that TOPESL was successful in indicating this difference.

TABLE 2

Average correlations of PL I and PL II with teachers' ratings and school performance. Fall 1969.

		CHOCTAW				ESKIMO				HOPI				NAVAJO			
		r	N	M	SD	r	N	M	SD	r	N	M	SD	r	N	M	SD
PL I				54	20			54	18			63	19			67	15
PL II				56	20			56	17			65	17			68	17
Teacher Ratings	Comp.	.59	130	2.8	1.0	.06	97	3.4	0.9	.20	99	3.1	0.7	.45	82	3.2	0.8
	Prod.	.65	131	2.7	1.0	.17	99	3.3	0.8	.23	99	3.0	0.7	.45	82	3.2	0.7
Teacher Grades	Arith.	.35	121	2.0	1.0	.13	96	2.4	0.9	.33	99	2.6	0.9	.11	101	2.8	0.9
	Read.	.39	121	2.6	1.1	.24	96	2.4	0.8	.38	99	2.8	0.8	.17	101	3.0	0.8
	Eng.	.34	121	2.3	1.0	.33	96	2.5	0.8	.30	99	2.5	0.7	.28	101	3.0	0.7
Reading Comp.		.71	55	4.6	1.3	.80	75	4.2	1.3	.82	126	3.9	1.2	.66	99	3.5	1.5
Arithmetic Reasoning		.50	53	5.0	1.1	.78	74	4.4	1.3	.74	126	4.0	1.3	.52	99	3.6	1.5
Mechanical English		.74	54	5.2	1.3	.74	72	4.4	1.5	.74	126	4.3	1.4	.50	98	4.0	1.5

TABLE 3

Correlations of amount of English contact outside of school with TOPESL section scores. No values for Choctaw and Hopi as there was no variation in English contact for those groups.

	ESKIMO		NAVAJO	
	3	4,5,6	3	4,5,6
English Structure	.33**	.25**	.26**	.14**
Listening Comprehension	.44**	.15**	.15**	.12**
Oral Production	.48**	.40**	.03ns	-.03ns
Number of Schools	23	23	26	26
Number of Pupils	236	600	1,382	4,122
English Contact M	2.25	2.17	2.14	2.25
SD	.65	.67	.83	.83

** - significant at .01 ns - not significant

Recommended Uses

For decisions involving individuals recommended uses of TOPESL scores are: (1) aiding in determining if a student is performing to potential; (2) individual placement; and (3) diagnosis of relative strength in various aspects of English.

Determination of performance to potential is aided by determining if an individual scores below levels which indicate little or no knowledge of English. On the English structure and listening comprehension sections, which are both multiple choice tests, an individual may get a raw score somewhat above zero by chance alone, even if he doesn't know the answer to any question. Because of the variation of chance scores, a score must be several points above the average chance score, before it is truly indicative of any knowledge of English at all. These chance scores are ES 432, LC 399, OP 382 in standard scores. See the following paragraph for a discussion of the origin of these figures. Where children score at or below these chance levels it may be assumed that they are significantly limited by their lack of knowledge of English and that this alone could account for failure to perform well in other subject areas. Conversely, a score at the level of performance of native English speakers would indicate that English was not a bar to performance in other areas. It must be noted that a low score on the English structure section alone, would be more properly considered as indicative of inability to read than lack of proficiency in English.

Individual placement should be decided by a decision procedure which incorporates local information and local situational factors as well as

TOPESL scores. Pertinent information from local sources would usually include grades, ratings by teachers, and scores on other standard tests. Local situational factors generally would determine the number of levels of placement actually available and would include such considerations as class sizes, time available for English structure instruction, number of teachers conversant with English structure techniques, quality and quantity of English structure materials available. Where local decision procedures have not yet been established and for non-local determination of the general level of English proficiency in groups of schools the following guidelines are suggested.

RECOMMENDATIONS	ES	LC	OP	AVG ST
Intensive instruction in English structure	0-432	0-399	0-382	0-407
Moderate instruction in English structure	433-538	400-525	383-548	408-527
No special English structure instruction	539 and above	526 and above	549 and above	528 and above

The first cutting score represents a point high enough to include 90 percent of the chance distribution for the ES and LC sections. The second cutting score represents a point 3.25 SE_m above the first cutting score for all three sections, so that the middle section is 3.25 SE_m wide. For the ES section the second cutting score is also the point corresponding to the tenth percentile of native speaker performance on an earlier form of the test of English structure. For the OP section, since there are no chance scores to provide a bottom cutting score and since data on native speaker performance has not yet been gathered to provide a top cutting score, a band 3.25 SE_m wide was established which covers approximately the same range as do the ES and LC cutting scores. Generally more than one section score will be available. A convenient way of combining them is to take the average standard (AVG ST) score, the cutting points for which are also indicated.

Diagnostic information on individuals is obtained by comparing section percentile scores, using the appropriate reference group. For example, of three Navajo fifth graders with standard scores and percentile scores of:

	ES		LC		OP	
	STD	%-ile Band	STD	%-ile Band	STD	%-ile Band
Pupil 1:	460	28-50	507	32-60	496	26-67
Pupil 2:	566	64-83	435	18-38	513	30-73
Pupil 3:	524	50-70	562	52-82	409	11-30

The first shows quite balanced performance across the three English skills, while the second shows possible deficiency in understanding spoken English and the third possible deficiency in producing English. It should be noted in comparing section scores, that the stability of a difference between two scores is less than that of one score taken alone. For this reason, comparison of section scores should be done using the percentile bands to take into account the SE_m. A student's performance on two sections of the test should not be considered different unless the percentile scores do not overlap.

For decisions involving groups, recommended use of TOPESL scores are: (1) diagnosis of group difficulties; (2) planning of curricula; and (3) evaluation of programs.

The source of information for group diagnosis is item data on the ES section. While the number of items per category is not high enough to give reliable diagnostic information about individuals, useful information about group performance on particular categories can be obtained from item statistics. Item statistics can be used in two ways. One is to use the information provided in Tables 7 through 11 directly. Table 7 gives the categorization of the items on the ES section. Table 8 and 9 are based on combined group and give rank order of difficulty (ROD), the difficulty score, p, (percent of the sample selected for item analysis marking the correct answer to the item) and an estimate of the percent of the population actually knowing the right answer, p', based on distribution of responses to the item. Tables 10 and 11 give p and p' for individual language groups. These figures provide information about the relative difficulties for various groups of the categories assessed by the ES section. For example item number 45 on form B of the ES section, which tests frequency adverb modifers, has a p' of .38 for total group, .08 for Choctaw, .30 for Eskimo, .91 for Hopi and .14 for Navajo, indicating that it is a difficult category for all groups for which data is provided except the children in Hopi schools. Item number 19 on form B which examines comparative modifiers, is about equally difficult for all groups with p' scores of .77 for total group, .71 for Choctaw, .84 for Eskimo, .74 for Hopi and .73 for Navajo.

A second use of item statistics is to compare the performance of classes on test items with the performance of the appropriate norms group. For example if a class at a Navajo school has a difficulty score of .27 for item number ten, which for children at Navajo schools in general has a difficulty score of .89, it may be concluded that that particular class has more trouble with questions containing verbs with separable particles (like "look up the word" or "look the word up") than the population from which they come. Therefore, time should be spent teaching such constructions. Calculation for this kind of use of item information are extremely simple, and only involve determining the percent of persons selecting the right answer to each question. This is then compared to the p score reported for that item for the appropriate reference group. Since these figures are for

grades four, five and six combined, classes which are all fourth or fifth or sixth may be expected to differ systematically from these, in that fourth graders score lower and sixth graders higher. Because there is some chance fluctuation in item statistics, differences between class difficulty scores and the reported difficulty scores should be greater than .20 to be considered meaningful.

Use of Norms Tables

Norms tables are provided for individual language groups, Choctaw, Eskimo, Hopi, Navajo and, in addition, for combined groups, for grades three, four, five and six. The tables are arranged so that conversion from raw to standard scores can be accomplished at the same time that percentile scores and percentile bands are obtained. Numbers on which tables are based, means and standard deviation are given at the bottom of each.

The score conversion is based on combined scores for all fourth, fifth and sixth graders tested. The mean of the standard scores is 500 and the standard deviation is set at 100. There were two reasons for choosing this score conversion scale. First, it has been in use for sometime, and many people are familiar with it. Second, because the standard scores vary around 500, they are not easily confused with IQ scores. Through the use of both standard scores and percentile scores by group, two simultaneous comparisons are allowed. The percentile scores for each group show relative standing for that grade and group, and the standard scores show whether the individual is above or below average for all children tested in grades four, five and six irrespective of grade. For example, a Hopi sixth grader with a raw score of 49 on the ES test would be almost one SD above average (standard score 594 is mean of 500 + .94 SD) for all children tested, and yet in the 35th percentile of his reference group. This means that 65 percent of his reference group scored higher than he did. Similarly an Eskimo fourth grader with a raw score of 19 on the LC test would be barely average for all children tested (standard score of 489 is mean of 500 less .11 SD) and yet in the 68th percentile for his reference group which means that only 32 percent of his reference group scored higher on the LC test.

The combined group tables are the recommended reference for all groups not sampled and for groups sampled, but for whom no percentile data are given because the numbers of persons on whom data was available was too low to compute percentiles. Specifically, there are no percentile data given for Choctaw and Hopi on the OP section.

Percentiles based on fewer than 200 persons are apt not to accurately reflect the true distribution of ability within the reference group, and so should be used with caution. This advisement applies to OP data for Eskimo schools, to all data for Hopi and Choctaw schools. Though the percentile

data for these groups must be used advisedly, they are provided here as they do give an idea of general ability level and distribution within the groups in Fall 1970 when data for the norms tables was obtained.

To provide an additional basis of comparison, it is recommended that norms based strictly on local groups be established. This is strongly advised for all groups for which no norm data are provided here and for groups for which the data given here are based on considerably fewer than 200 persons. The development of norms for local groups is a straightforward procedure which involves calculating midpoint percentiles from frequency distributions of scores of groups of 200 or more.

As an example of the use of the norms tables, consider a fifth grade Eskimo who had the following raw scores. ES 39, LC 18, OP 49. Looking in the norms tables for Eskimo schools for fifth graders, it's found that these raw scores correspond to standard scores of ES 524, LC 471, OP 546 and percentile bands of ES 31-52, LC 22-36, OP 34-83. Since these bands all overlap somewhat, it cannot be concluded that this student's abilities differ on the skills assessed by the various sections of TOPESL.

Description of the Norms Sample

The population for the norms consisted of all Amerindian children in grades three, four, five and six in school on the ten days following the twenty-fifth day of instruction in the Fall of 1970, in the schools selected. Schools were selected on the basis of a stratified sampling schema which took into consideration: whether schools were boarding or day, school size, school accessibility, language group of school population, and availability of teachers for workshops held in Summer 1970. These workshops were given to train teachers in the administration and scoring of the OP section of TOPESL. Because only schools with Choctaw, Eskimo, Hopi and Navajo speakers were selected and because consideration of availability of teachers was involved, the sample cannot be said to be strictly representative of the total population of BIA schools. However the 6,977 pupils tested constitute 43 percent of the 16,040 enrolled in Bureau schools in grades three, four, five and six in 1970, and of the 37 listings by tribe in Statistics Concerning Indian Education, the four language groups tested account for 83 percent of the total BIA school population.

For purposes of description, schools participating in the norming administration were classified into the following categories:

Total Enrollment:	5 sizes - 0-74	75-149	150-299	300-600	600+
Accessibility:	3 degrees - remote		difficult		easy
English Contact:	3 degrees - none		some		frequent

The sampling of schools within the five size strata is indicated in Table 4.

TABLE 4

Comparison of School Sizes in Sample
and in BIA School Population

Size	No. in Population			No. in Sample			Percent Sampled
	Boarding	Day	Total	Boarding	Day	Total	
0-74	8	75	83	0	12	12	.145
75-149	7	34	41	1	6	7	.17
150-299	17	21	38	4	7	11	.29
300-599	17	4	21	6	1	7	.33
600+	28	4	32	15	2	17	.53
Totals	77	138	215	26	28	54	.25

As can be seen from Table 4 large schools are over-represented in the sample obtained, with a corresponding under-representation of small schools. Because the correlation of school size with test scores varies for different language groups, as reported in Table 5, that table should be examined to determine the effect of this over-representation of large schools, in particular cases.

TABLE 5

Correlation of School Size with TOPESL Section Scores

	ES	LC	OP	# of Schools	# of Pupils	Mean Size	SD Size
Choctaw 3	.55**	.06^{ns}	.39**	2	68	4.2	.96
Choctaw 4,5,6	.29**	.13^{ns}	-.34**	2	196	4.2	.98
Eskimo 3	.22**	.40**	.43**	23	236	2.3	1.2
Eskimo 4,5,6	.22**	.14**	.31**	23	600	2.2	1.1
Hopi	---------- No Variation in School Size ----------						
Navajo 3	.13**	.08*	.07*	26	1,382	4.5	.63
4	.07*	.04^{ns}	-.01^{ns}	26	1,502	4.5	.63
5	.12**	.08*	-.06*	26	1,344	4.5	.63
6	.05^{ns}	.08*	-.19**	26	1,310	4.7	.45

ns not significant * significant .05 ** significant .01

Table 6 provides a complete listing by number of the constitutions of the norms sample considering the characteristics: school size, school accessibility, English usage, grade, sex, age and language group. The schools which participated in the norming administration are listed in Appendix II.

TABLE 6

Numbers in Sample

Grade	Total	School Size					School Access.		
		1	2	3	4	5	1	2	3
3	1,802	71	96	210	592	833	523	856	423
4	1,894	74	99	189	524	1,008	500	936	458
5	1,648	52	99	141	474	882	397	796	455
6	1,633	65	57	121	428	962	393	726	514
	6,977	262	351	661	2,018	3,685	1,813	3,314	1,850

Grade	English Usage			Sex		Language			
	1	2	3	M	F	Choc.	Esk.	Hopi	Nav.
3	424	636	742	914	885	68	236	110	1,388
4	440	579	875	829	1,001	78	232	81	1,503
5	377	497	774	849	793	52	189	57	1,350
6	306	469	858	783	846	66	179	76	1,312
	1,547	2,181	3,249	3,375	3,525	264	836	324	5,553

Grade	Age						
	8	9	10	11	12	13	14
3	332	792	404	136	31	7	10
4	24	272	832	458	166	42	13
5	3	7	208	749	455	142	47
6	2	1	11	216	751	445	179
	361	1,072	1,455	1,559	1,403	636	249

TABLE 7

CLASSIFICATION OF WRITTEN ITEMS

	Form A	Form B
V. Verb		
1. Auxilliary		
a) Agreement w/reply	A23, A26, A37, A57	B23, B24, B46
b) Do in question	A5, A48	B14
c) Replacive	A45	B16, B41, B47, B52
d) Modal	A27	B11
e) Passive	A20, A42, A60	B30, B36, B62
2. Complement		
a) Infinitive	A3	B9
b) Inf. without to	A32, A41	B18, B28
c) Gerund	A36	A37
3. Order in question with separable particle	A7, A10, A11	B12, B20
4. Tense		
a) Agreement w/adverb	A33, A49, A54, A56, A59	B34, B44, B55, B56, B60
b) Past as conditional	A31, A46, A62	B17, B49, B22
c) Sequence of	A2	B50
M. Modifier		
1. Comparative	A21, A22, A30, A34, A38	B25, B38, B19, B27, B15, B31
2. Adjective		
a) Selection	A8	B4
b) Numeral	A52	B43
3. Adverbial		
a) Negative	A9	B26
b) Intensifier	A12	B10
c) Frequency	A15, A44	B45
d) Time	A17	B5
e) Locative Phrase	A53	B54
N. Nominal		
1. Relative pronoun	A4, A13, A18	B1, B6, B42
2. Direct object pronoun	A14, A35	B40
3. Reflexive	A24	B2
4. Possessive pronoun	A47, A50, A55, A58	B31, B48, B33, B61
5. Noun selection	A29	B3
C. Conjunction		
1. Coordinate	A1, A6	B8, B53
2. Subordinate	A40, A43, A61, A16, A19, A39	B29, B39, B59, B58, B35, B51, B32
Q. Question reply	A25, A51	B7, B57
W. Word order in relative clause	A28	B13

TABLE 8

Statistics for Combined Groups

English Structure: Form A

Item #	Category	P	P'	r_{pbi}	ROD	Matched Item	Item #	Category	P	P'	r_{pbi}	ROD	Matched Item
A 1	C1	.88	.81	.39	61	B 8	A 32	V2b	.60	.36	.36	26	B 18
A 2	V4c	.85	.74	.31	60	B 50	A 33	V4a	.60	.40	.35	27	B 34
A 3	V2a	.81	.66	.38	55	B 9	A 34	M1	.63	.49	.54	31	B 27
A 4	N1	.81	.73	.45	57	B 1	A 35	N2	.63	.50	.47	32	B 40
A 5	V1b	.80	.64	.46	54	B 14	A 36	V2c	.61	.47	.49	29	B 37
A 6	C1	.82	.72	.46	58	B 53	A 37	V1a	.61	.45	.37	30	B 24
A 7	V3	.75	.58	.36	45	X	A 38	M1	.48	.30	.55	18	B 21
A 8	M2a	.76	.62	.52	47	B 4	A 39	C2	.47	.25	.29	14	B 32
A 9	M3a	.75	.59	.51	46	B 26	A 40	C2	.57	.41	.44	23	B 29
A 10	V3	.88	.81	.31	62	B 20	A 41	V2b	.57	.40	.39	22	B 28
A 11	V3	.79	.66	.43	53	B 12	A 42	V1e	.57	.48	.53	24	B 36
A 12	M3b	.68	.45	.50	36	B 10	A 43	C2	.54	.44	.49	19	B 39
A 13	N1	.78	.68	.22	51	B 6	A 44	M3c	.48	.29	.44	17	X
A 14	N2	.83	.75	.35	59	X	A 45	V1c	.55	.51	.45	21	B 16
A 15	M3c	.67	.51	.55	35	B 45	A 46	V4b	.44	.29	.49	11	B 49
A 16	C2	.71	.55	.36	41	B 35	A 47	N4	.47	.29	.57	15	B 31
A 17	M3d	.76	.62	.48	48	B 5	A 48	V1b	.47	.30	.38	16	X
A 18	N1	.79	.71	.55	52	B 42	A 49	V4a	.46	.37	.36	13	B 44
A 19	C2	.77	.67	.54	50	B 51	A 50	N4	.42	.23	.43	6	B 48
A 20	V1e	.65	.41	.30	33	B 30	A 51	Q	.38	.28	.48	3	B 57
A 21	M1	.74	.59	.50	21	B 25	A 52	M2b	.43	.23	.62	7	B 43
A 22	M1	.71	.55	.52	22	B 38	A 53	M3e	.57	.63	.68	25	B 54
A 23	V1a	.70	.53	.55	39	B 23	A 54	V4a	.55	.60	.60	20	B 55
A 24	N3	.71	.53	.55	43	B 2	A 55	N4	.46	.41	.58	12	B 33
A 25	Q	.76	.64	.44	49	B 7	A 56	V4a	.40	.34	.44	5	B 56
A 26	V1a	.65	.46	.41	34	B 46	A 57	V1a	.43	.39	.57	10	X
A 27	V1d	.81	.73	.49	56	B 11	A 58	N4	.43	.41	.72	8	B 61
A 28	W	.69	.55	.52	37	B 13	A 59	V4a	.43	.34	.56	9	B 60
A 29	N5	.69	.56	.51	38	B 3	A 60	V1e	.31	.04	.37	1	B 62
A 30	M1	.70	.59	.54	40	B 19	A 61	C2	.38	.28	.40	4	B 59
A 31	V46	.60	.39	.50	28	B 17	A 62	V4b	.33	.17	.37	2	B 22

TABLE 9

Statistics for Combined Groups

English Structure: Form B

Item #	Category	P	P'	r_{pbi}	ROD	Matched Item
B 1	N1	.80	.70	.34	55	A 4
B 2	N3	.85	.77	.45	60	A 24
B 3	N5	.88	.65	.47	49	A 29
B 4	M2a	.88	.79	.26	62	A 8
B 5	M3d	.78	.63	.23	51	A 17
B 6	N1	.73	.54	.33	43	A 13
B 7	Q	.87	.79	.26	61	A 25
B 8	C1	.75	.58	.54	45	A 1
B 9	V2a	.78	.65	.50	50	A 3
B 10	M3b	.75	.42	.43	46	A 12
B 11	V1d	.83	.73	.45	58	A 27
B 12	V3	.79	.66	.39	54	A 11
B 13	W	.79	.65	.35	53	A 28
B 14	V1b	.81	.69	.42	57	A 5
B 15	M1	.79	.64	.22	52	X
B 16	V1c	.63	.41	.43	28	A 45
B 17	V4b	.73	.58	.55	44	A 31
B 18	V2b	.80	.72	.40	56	A 32
B 19	M1	.84	.77	.42	59	A 30
B 20	V3	.75	.42	.50	47	A 10
B 21	M1	.72	.57	.59	42	A 38
B 22	V4b	.58	.32	.38	22	A 62
B 23	V1a	.69	.54	.57	40	A 23
B 24	V1a	.65	.45	.59	31	A 37
B 25	M1	.69	.49	.52	39	A 21
B 26	M3a	.68	.46	.42	36	A 9
B 27	M1	.65	.44	.54	32	A 34
B 28	V2b	.75	.65	.45	48	A 41
B 29	C2	.70	.57	.40	41	A 40
B 30	V1e	.68	.55	.33	37	A 20
B 31	N4	.62	.40	.66	26	A 47
B 32	C2	.68	.53	.35	38	A 39
B 33	N4	.61	.44	.62	25	A 55
B 34	V4a	.67	.53	.54	35	A 33
B 35	C2	.64	.49	.37	30	A 16
B 36	V1e	.64	.48	.56	29	A 42
B 37	V2c	.60	.38	.62	24	A 36
B 38	M1	.65	.54	.58	33	A 22
B 39	C2	.56	.40	.57	19	A 43
B 40	N2	.62	.47	.41	27	A 35
B 41	V1c	.54	.31	.59	18	X
B 42	N1	.65	.57	.60	34	A 18
B 43	M2b	.46	.29	.53	13	A 52
B 44	V4a	.52	.38	.59	17	A 49
B 45	M3c	.49	.38	.57	14	A 15
B 46	V1a	.50	.38	.54	15	A 26
B 47	V1c	.57	.49	.60	21	X
B 48	N4	.56	.48	.61	20	A 50
B 49	V4b	.44	.20	.53	11	A 46
B 50	V4c	.38	.20	.51	6	A 2
B 51	C2	.41	.20	.59	9	A 19
B 52	A1c	.39	.25	.58	8	X
B 53	C1	.37	.19	.53	4	A 6
B 54	M3e	.50	.38	.54	15	A 53
B 55	V4a	.57	.49	.60	21	A 54
B 56	V4a	.37	.27	.55	5	A 56
B 57	Q	.38	.30	.51	7	A 51
B 58	C2	.36	.29	.57	3	X
B 59	C2	.37	.19	.53	4	A 61
B 60	V4a	.42	.43	.68	10	A 59
B 61	N4	.30	.19	.44	2	A 58
B 62	V1e	.27	.10	.56	1	A 60

TABLE 10

English Structure: Form A

	Choctaw		Eskimo		Hopi		Navajo			Choctaw		Eskimo		Hopi		Navajo	
Item #	p	p'	p	p'	p	p'	p	p'	Item #	p	p'	p	p'	p	p'	p	p'
1	.87	.76	.87	.79	.96	.92	.86	.77	32	.47	.22	.70	.57	.90	.84	.50	.15
2	.76	.55	.85	.77	.92	.84	.85	.86	33	.58	.48	.66	.47	.92	.86	.48	.20
3	.74	.53	.81	.71	.92	.86	.79	.66	34	.61	.58	.70	.55	.84	.69	.55	.34
4	.76	.63	.81	.71	.92	.84	.80	.67	35	.55	.45	.64	.49	.80	.65	.60	.43
5	.66	.42	.83	.75	.94	.88	.78	.59	36	.45	.27	.72	.69	.90	.82	.52	.29
6	.71	.53	.79	.71	.94	.90	.82	.72	37	.47	.28	.51	.25	.86	.74	.60	.15
7	.61	.32	.74	.59	.88	.79	.75	.58	38	.32	.36	.55	.36	.76	.61	.41	.56
8	.66	.45	.93	.90	.94	.90	.66	.46	39	.47	.39	.42	.11	.82	.69	.37	.08
9	.76	.62	.66	.50	.94	.90	.72	.45	40	.42	.40	.57	.39	.90	.84	.50	.23
10	.76	.61	.87	.83	.94	.92	.89	.83	41	.42	.38	.62	.57	.88	.76	.48	.21
11	.68	.47	.72	.56	.90	.82	.82	.69	42	.37	.41	.57	.53	.82	.72	.54	.41
12	.68	.42	.70	.52	.90	.82	.61	.31	43	.37	.53	.57	.38	.82	.69	.49	.18
13	.68	.50	.74	.62	.80	.61	.82	.66	44	.29	.26	.43	.83	.82	.67	.43	.30
14	.79	.70	.77	.75	.94	.90	.82	.86	45	.42	.74	.64	.59	.90	.80	.44	.28
15	.58	.35	.57	.31	.88	.82	.66	.45	46	.32	.50	.57	.40	.76	.62	.33	.41
16	.73	.65	.74	.60	.86	.78	.64	.41	47	.34	.45	.51	.26	.74	.56	.40	.18
17	.71	.54	.70	.56	.92	.88	.75	.57	48	.34	.50	.57	.43	.92	.90	.32	.25
18	.71	.59	.79	.69	.88	.82	.78	.65	49	.34	.56	.42	.17	.76	.60	.41	.21
19	.66	.50	.79	.69	.94	.90	.74	.59	50	.26	.38	.34	.12	.65	.46	.40	.22
20	.61	.45	.68	.46	.88	.76	.58	.27	51	.18	.0	.30	0	.51	.21	.40	.29
21	.55	.31	.74	.58	.94	.90	.72	.55	52	.26	.38	.55	.48	.59	.27	.37	.15
22	.55	.31	.81	.67	.90	.82	.66	.47	53	.26	.50	.57	.70	.78	.65	.57	.50
23	.47	.63	.74	.62	.94	.90	.61	.34	54	.24	.43	.57	.64	.80	.67	.54	.23
24	.58	.40	.68	.49	.98	.96	.67	.42	55	.24	.58	.43	.29	.76	.68	.42	.32
25	.63	.50	.77	.69	.86	.74	.76	.59	56	.29	.83	.45	.43	.67	.54	.33	.12
26	.68	.64	.55	.26	.78	.61	.64	.44	57	.16	.17	.43	.35	.69	.54	.42	.35
27	.76	.73	.79	.73	.94	.90	.78	.64	58	.18	.33	.45	.46	.69	.59	.31	.39
28	.55	.44	.59	.41	.84	.76	.71	.56	59	.18	.25	.36	.81	.69	.52	.42	.37
29	.61	.58	.76	.67	.90	.84	.62	.40	60	.24	.58	.38	.19	.63	.37	.21	.24
30	.61	.63	.70	.60	.78	.61	.72	.59	61	.21	.50	.42	.32	.74	.57	.30	.09
31	.58	.44	.64	.40	.82	.67	.52	.27	62	.26	.67	.34	.22	.57	.33	.27	.11

TABLE 11

English Structure: Form B

	Choctaw		Eskimo		Hopi		Navajo			Choctaw		Eskimo		Hopi		Navajo	
Item #	p	p'	p	p'	p	p'	p	p'	Item #	p	p'	p	p'	p	p'	p	p'
1	.59	.38	.82	.74	.98	.96	.80	.67	32	.56	.43	.49	.47	.89	.80	.70	.55
2	.85	.72	.78	.64	.98	.96	.83	.73	33	.44	.21	.67	.51	.91	.85	.53	.32
3	.72	.56	.73	.55	.94	.89	.75	.63	34	.56	.52	.65	.47	.89	.80	.63	.43
4	.77	.59	.90	.80	.94	.89	.88	.80	35	.49	.42	.59	.39	.74	.56	.68	.50
5	.74	.59	.77	.61	.78	.61	.79	.65	36	.36	.21	.75	.67	.91	.85	.59	.36
6	.59	.33	.55	.24	.78	.59	.81	.69	37	.36	.35	.69	.52	.94	.87	.52	.24
7	.74	.59	.90	.82	.89	.83	.68	.82	38	.51	.48	.75	.63	.89	.81	.57	.42
8	.72	.54	.77	.63	.91	.83	.70	.47	39	.46	.43	.55	.38	.85	.76	.49	.27
9	.69	.49	.78	.65	.91	.85	.75	.63	40	.44	.41	.65	.46	.72	.46	.63	.48
10	.56	.26	.69	.49	.89	.83	.59	.30	41	.51	.62	.61	.40	.94	.89	.39	.08
11	.87	.79	.78	.84	.96	.91	.79	.67	42	.41	.42	.63	.45	.94	.87	.63	.54
12	.80	.69	.77	.63	.87	.76	.78	.63	43	.36	.27	.51	.30	.80	.67	.37	.13
13	.87	.82	.69	.50	.87	.74	.78	.62	44	.33	.19	.49	.21	.78	.67	.50	.37
14	.85	.74	.71	.54	.96	.91	.79	.65	45	.26	.08	.55	.30	.94	.91	.39	.14
15	.72	.54	.65	.36	.94	.89	.81	.67	46	.41	.40	.47	.29	.70	.56	.46	.31
16	.59	.33	.71	.54	.94	.89	.52	.21	47	.39	.36	.59	.47	.83	.77	.52	.42
17	.56	.32	.80	.72	.98	.96	.66	.47	48	.28	.83	.61	.47	.74	.66	.56	.46
18	.80	.71	.78	.70	.98	.96	.80	.67	49	.26	0	.41	.09	.83	.75	.38	.09
19	.82	.71	.86	.84	.85	.74	.83	.73	50	.18	0	.43	.25	.74	.61	.30	.27
20	.77	.66	.73	.50	.94	.87	.70	.47	51	.28	.20	.49	.36	.72	.52	.32	0
21	.72	.61	.78	.68	.94	.89	.63	.42	52	.37	.50	.43	.14	.72	.55	.27	.04
22	.54	.38	.55	.24	.74	.54	.56	.28	53	.28	.30	.57	.48	.83	.77	.43	.38
23	.64	.53	.73	.58	.94	.89	.62	.41	54	.31	.47	.59	.58	.89	.89	.57	.73
24	.54	.44	.61	.42	.80	.65	.61	.43	55	.18	.13	.43	.20	.85	.82	.41	.35
25	.62	.46	.75	.62	.91	.83	.61	.35	56	.18	.21	.33	.25	.70	.55	.34	.23
26	.56	.35	.65	.14	.89	.80	.65	.34	57	.26	.54	.31	0	.59	.61	.37	.34
27	.51	.35	.71	.52	.96	.91	.57	.27	58	.28	.64	.31	.10	.76	.70	.28	.11
28	.54	.42	.63	.38	.91	.82	.80	.71	59	.23	.29	.39	.08	.72	.54	.29	.05
29	.74	.61	.69	.55	1.00	1.00	.60	.42	60	.23	.38	.43	.20	.80	.72	.35	.35
30	.59	.46	.67	.53	.82	.65	.66	.49	61	.23	.36	.39	.15	.61	.49	.17	0
31	.49	.23	.65	.45	.98	.96	.53	.25	62	.15	.15	.31	.08	.67	.51	.16	0

Norms Tables

The following 20 pages present the raw to standard score conversions, midpoint percentiles and percentile bands for Combined Group, and for Choctaw, Eskimo, Hopi and Navajo schools. The English structure, listening comprehension and oral production percentiles are listed together by grade. The English structure section is referred to in the tables as "Written." Abbreviations used are: Stnd for Standard; Band for Percentile Band; and Mid for Midpoint Percentile. An asterisk (*) indicates that the percentile scores are either less than 1 percent or greater than 99 percent, appropriately as it occurs at the top or bottom of the table.

The number of pupils on whom the percentile figures are based, the mean and standard deviation for each group are given at the bottom of the tables.

COMBINED GROUPS

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164	*- 2	1	130		
2	264	*- 4	*	182	*- 3	2	139	*- 3	*
3	271	*- 5	1	200	1- 3	2	148	*- 4	1
4	278	*- 7	2	218	2- 4	3	157	*- 5	2
5	285	*- 8	3	226	2- 6	3	166	*- 6	2
6	292	*-10	4	254	3-10	4	174	*- 7	2
7	299	1-12	5	272	3-14	6	182	*- 8	3
8	306	1-14	6	290	4-20	10	191	*- 9	3
9	313	2-17	7	308	6-25	14	200	1-10	4
10	320	3-20	9	326	10-32	20	209	2-12	5
11	327	4-23	11	345	14-38	25	218	2-13	6
12	334	5-26	13	363	20-44	32	226	2-15	7
13	341	7-31	16	381	25-52	38	234	3-16	8
14	348	8-36	18	399	32-58	44	243	3-18	9
15	355	10-41	21	417	38-65	52	252	4-19	10
16	362	12-47	25	435	44-73	58	261	5-22	12
17	369	14-53	28	453	52-77	65	270	6-23	13
18	376	17-59	33	471	58-82	73	278	7-25	15
19	383	20-64	38	489	65-86	77	287	8-26	16
20	390	23-68	44	507	73-89	82	295	9-28	18
21	397	27-72	50	525	77-92	86	303	10-30	19
22	404	31-75	56	543	82-94	89	312	12-32	22
23	411	36-78	62	562	86-96	92	321	13-34	23
24	418	41-80	66	580	89-98	94	330	15-36	25
25	425	46-82	71	598	92-99	96	339	16-38	26
26	432	53-84	74	616	94- *	98	347	18-39	28
27	439	59-85	77	634	96- *	*	356	19-41	30
28	446	64-87	79	652			365	22-42	32
29	453	68-89	82	670			374	23-44	34
30	460	72-90	83	686			382	25-46	36

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285	*- 3	*	226	*- 2	*	166		
6	292	*- 4	1	254	*- 3	1	174		
7	299	*- 5	1	272	*- 4	2	182	*- 2	*
8	306	*- 6	2	290	1- 7	3	191	*- 3	1
9	313	*- 7	3	303	2-11	5	200	*- 3	1
10	320	1- 8	3	326	3-15	8	209	*- 4	2
11	327	1-10	4	345	5-19	11	218	*- 4	2
12	334	2-12	5	363	8-24	15	226	*- 5	2
13	341	2-15	6	381	11-29	19	234	1- 6	3
14	348	3-18	8	399	15-34	24	243	1- 7	3
15	355	4-22	9	417	19-40	29	252	1- 8	3
16	362	5-25	11	435	24-46	34	261	2- 9	4
17	369	6-30	14	453	28-52	40	270	2-10	4
18	376	7-34	17	471	34-59	46	278	2-11	5
19	383	8-37	20	489	40-66	52	287	3-12	6
20	390	10-41	23	507	46-73	59	295	3-13	7
21	397	12-45	27	525	52-79	66	303	3-14	8
22	404	15-47	32	543	59-84	73	312	4-15	9
23	411	18-50	36	562	66-89	79	321	4-17	10
24	418	22-54	40	580	73-93	85	330	5-18	10
25	425	25-56	43	598	79-96	89	339	6-19	12
26	432	29-58	46	616	85-99	93	347	7-21	13
27	439	35-60	49	634	89- *	96	356	8-23	14
28	446	38-63	52	652	93- *	99	365	9-24	15
29	453	42-65	55	670	96- *	*	374	10-26	17
30	460	45-67	57	686			382	11-28	18

COMBINED GROUPS

Third Grade

	Written			LC	OPT			Written			LC	OPT			
Raw	Stnd	Band	Mid		Stnd	Band	Mid	Stnd	Band	Mid		Stnd	Band	Mid	Raw
31	468	75-91	85		391	26-49	38	468	47-69	60		391	12-30	19	31
32	475	78-91	86		400	28-52	39	475	51-71	62		400	13-33	21	32
33	482	80-92	88		409	30-55	41	482	54-72	64		409	15-36	23	33
34	489	82-92	89		417	32-58	42	489	56-74	66		417	17-39	24	34
35	496	84-93	90		426	34-61	44	496	58-75	69		426	18-42	26	35
36	503	85-93	91		434	36-65	46	503	60-77	70		434	19-45	28	36
37	510	87-94	92		443	38-67	49	510	63-78	71		443	21-49	30	37
38	517	89-94	92		452	39-69	52	517	65-80	73		452	23-53	33	38
39	524	90-95	93		461	41-71	55	524	67-82	74		461	24-57	36	39
40	531	90-95	93		470	42-73	58	531	69-83	76		470	26-61	39	40
41	538	91-96	94		478	44-76	61	538	71-85	78		478	28-64	42	41
42	545	92-96	94		487	46-80	64	545	72-86	80		487	30-68	45	42
43	552	92-97	95		496	49-83	67	552	74-87	81		496	33-72	49	43
44	559	93-97	95		504	52-86	69	559	75-89	83		504	36-76	53	44
45	566	94-98	96		513	55-88	71	566	77-90	84		513	39-79	56	45
46	573	94-98	96		522	58-90	73	573	78-91	85		522	42-82	61	46
47	580	95-98	97		530	61-92	76	580	80-92	87		530	45-84	64	47
48	587	95-98	97		539	65-93	80	587	82-93	88		539	49-87	68	48
49	594	96-99	98		548	67-95	83	594	83-94	89		548	53-89	72	49
50	601	96- *	98		557	69-96	86	601	85-94	90		557	57-92	76	50
51	608	96- *	98		566	71-97	88	608	86-95	91		566	61-94	79	51
52	615	97- *	98		574	73-98	90	615	87-96	92		574	64-96	82	52
53	622	97- *	99		583	76-98	92	622	89-97	93		583	68-97	84	53
54	629	98- *	99		591	80-99	93	629	90-98	94		591	72-98	87	54
55	636	98- *	*		600	83- *	95	636	91-98	95		600	76- *	89	55
56	643				609	86- *	96	643	92-99	96		609	79- *	92	56
57	650				618	89- *	97	650	93- *	97		618	82- *	94	57
58	657				626	90- *	98	657	94- *	97		626	84- *	96	58
59	664				635	92- *	99	664	94- *	98		635	87- *	97	59
60	672				644	93- *	*	672	95- *	99		644	89- *	98	60
61	679							679	96- *	*					61
62	686							686							62
	Mean 22.0			Mean 14.9	Mean 35.0			Mean 32.0			Mean 18.2	Mean 41.0			
	SD 10.0			SD 5.5	SD 14.1			SD 12.6			SD 5.4	SD 12.1			
	N 1,786			N 1,898	N 576			N 1,885			N 2,051	N 594			

Fourth Grade

COMBINED GROUPS

	Fifth Grade									Sixth Grade									
	Written			LC			OPT			Written			LC			OPT			
Raw	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	Raw
1	257			164			130			257			164			130			1
2	264			182			139			264			182			139			2
3	271			200			148			271			200			148			3
4	278			218			157			278			218			157			4
5	285			226			166	*- 2	*	285			226			166			5
6	292			254	*- 2	*	174	*- 2	1	292			254			174			6
7	299			272	*- 3	1	182	*- 2	1	299			272			182			7
8	306			290	*- 4	2	191	*- 2	1	306			290			191			8
9	313	*- 3	*	308	1- 6	3	200	*- 2	1	313			303	*- 2	*	200			9
10	320	*- 4	1	326	2- 8	4	209	*- 3	2	320			326	*- 3	1	209			10
11	327	*- 5	1	345	3-10	6	218	*- 3	2	327			345	*- 5	2	218			11
12	334	*- 6	2	363	4-14	8	226	1- 3	2	334			363	1- 6	3	226	*- 2	*	12
13	341	*- 8	2	381	6-19	10	234	1- 4	2	341	*- 3	*	381	2- 9	5	234	*- 3	1	13
14	348	1-10	3	399	8-22	14	243	1- 4	2	348	*- 4	1	399	3-11	6	243	*- 3	1	14
15	355	1-12	4	417	10-26	19	252	2- 5	2	355	*- 5	2	417	5-14	9	252	*- 3	1	15
16	362	1-14	5	435	14-30	22	261	2- 5	3	362	*- 7	2	435	6-18	11	261	*- 4	2	16
17	369	2-16	7	453	19-36	26	270	2- 6	3	369	*- 8	3	453	9-22	14	270	*- 4	2	17
18	376	3-19	9	471	22-42	30	278	2- 6	3	376	1-10	4	471	11-27	18	278	1- 4	2	18
19	383	4-22	11	489	26-49	36	287	2- 7	4	383	1-11	5	489	14-33	22	287	1- 4	3	19
20	390	5-24	13	507	30-57	42	295	2- 8	4	390	2-12	6	507	18-40	27	295	1- 5	3	20
21	397	6-26	16	525	36-64	49	303	3-10	5	397	3-14	8	525	22-48	33	303	1- 5	3	21
22	404	8-29	18	543	42-72	57	312	3-11	5	404	3-15	9	543	27-57	40	312	2- 5	4	22
23	411	10-32	20	562	49-78	64	321	3-12	6	411	4-17	10	562	33-66	48	321	2- 6	4	23
24	418	12-34	23	580	57-88	72	330	4-13	6	418	5-19	12	580	40-76	57	330	2- 6	4	24
25	425	14-36	25	598	64-91	78	339	4-14	7	425	6-20	13	598	48-84	66	339	3- 7	4	25
26	432	16-38	28	616	72-95	88	347	5-15	8	432	8-22	15	616	57-92	76	347	3- 8	5	26
27	439	19-40	30	634	78-98	91	356	5-16	10	439	10-24	16	634	66-97	84	356	3- 9	5	27
28	446	22-42	33	652	88-98	95	365	6-18	11	446	11-26	18	652	76-98	92	365	4-10	5	28
29	453	24-44	35	670	91- *	98	374	6-19	12	453	12-28	20	670	84- *	97	374	4-11	6	29
30	460	26-46	37	686	95- *	*	382	7-22	13	460	14-30	22	686	92- *	98	382	4-13	6	30

COMBINED GROUPS

Fifth Grade

Written			LC	OPT		
Raw	Stnd	Band	Mid		Stnd	Band	Mid
31	468	29-48	39		391	8-25	14
32	475	32-50	41		400	10-27	15
33	482	34-53	43		409	11-29	16
34	489	36-55	46		417	12-31	18
35	496	38-57	48		426	13-34	19
36	503	40-59	50		434	14-37	22
37	510	42-62	52		443	15-39	25
38	517	44-64	54		452	16-42	27
39	524	46-66	56		461	18-46	29
40	531	48-68	58		470	19-50	31
41	538	50-71	61		478	22-54	34
42	545	53-73	63		487	25-60	37
43	552	55-75	65		496	27-64	39
44	559	57-78	67		504	29-68	42
45	566	59-80	70		513	31-71	46
46	573	62-82	72		522	34-75	50
47	580	64-84	74		530	37-79	54
48	587	66-86	76		539	39-83	60
49	594	68-88	79		548	42-86	64
50	601	71-90	81		557	46-89	68
51	608	73-92	84		566	50-92	71
52	615	75-94	86		574	54-95	75
53	622	78-95	88		583	60-98	79
54	629	80-97	89		591	64-99	83
55	636	82-98	91		600	68- *	86
56	643	84-99	93		609	71- *	89
57	650	86- *	95		618	75- *	92
58	657	88- *	96		626	79- *	95
59	664	90- *	97		635	83- *	98
60	672	92- *	98		644	86- *	99
61	679	94- *	99				
62	686	95- *	*				
	Mean 36.4			Mean 20.3	Mean 43.5		
	SD 13.8			SD 5.4	SD 11.3		
	N 1,641			N 1,758	N 538		

Sixth Grade

Written			LC	OPT			
Stnd	Band	Mid		Stnd	Band	Mid	Raw
468	15-32	24		391	4-15	7	31
475	17-34	26		400	5-17	8	32
482	19-35	28		409	5-19	9	33
489	20-37	29		417	5-21	10	34
496	22-39	31		426	6-23	11	35
503	24-41	33		434	6-25	13	36
510	26-43	35		443	7-28	15	37
517	28-46	36		452	8-30	17	38
524	30-48	38		461	9-33	19	39
531	32-50	40		470	10-37	21	40
538	34-53	42		478	11-40	23	41
545	35-56	45		487	13-46	25	42
552	37-58	47		496	15-48	28	43
559	39-60	49		504	17-53	30	44
566	41-63	52		513	19-58	33	45
573	43-66	54		522	21-62	36	46
580	46-69	57		530	23-68	40	47
587	48-71	59		539	25-72	45	48
594	50-74	62		548	28-78	48	49
601	53-77	64		557	30-82	53	50
608	56-80	67		566	33-86	58	51
615	58-84	70		574	37-90	63	52
622	60-87	73		583	40-94	68	53
629	63-90	76		591	46-97	73	54
636	66-94	78		600	48- *	78	55
643	69-97	82		609	53- *	82	56
650	71-99	85		618	58- *	86	57
657	74- *	89		626	63- *	90	58
664	77- *	92		635	68- *	94	59
672	80- *	96		644	72- *	97	60
679	84- *	98					61
686	87- *	99					62
Mean 42.2			Mean 22.4	Mean 46.8			
SD 13.8			SD 4.7	SD 10.2			
N 1,624			N 1,740	N 522			

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257	*-13	4	164	*-20	9	130		
2	264	*-16	6	182	3-23	15	139		
3	271	*-18	8	200	9-26	20	148		
4	278	*-20	11	218	15-30	23	157		
5	285	2-22	12	226	20-36	26	166		
6	292	5-24	14	254	23-44	30	174		
7	299	7-26	17	272	26-55	36	182		
8	306	10-28	19	290	30-64	44	191		
9	313	12-29	21	308	36-69	55	200		
10	320	13-31	23	326	44-76	64	209		
11	327	16-32	25	345	55-84	69	218		
12	334	18-35	27	363	64-88	76	226		
13	341	20-37	30	381	69-91	84	234		
14	348	22-40	31	399	76-92	88	243		
15	355	24-43	31	417	84-94	91	252		
16	362	26-47	33	435	88-96	92	261		
17	369	28-52	37	453	91-97	94	270		
18	376	30-60	40	471	92-97	96	278		
19	383	31-66	42	489	94-98	97	287		
20	390	32-69	45	507	96-99	97	295		
21	397	35-72	49	525	97- *	98	303		
22	404	38-75	57	543	97- *	*	312		
23	411	41-78	63	562			321		
24	418	43-81	68	580			330		
25	425	47-84	71	598			339		
26	432	53-88	73	616			347		
27	439	60-90	77	634			356		
28	446	66-93	80	652			365		
29	453	70-95	83	670			374		
30	460	72-96	87	686			382		

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278	*- 3	*	218			157		
5	285	*- 3	1	226			166		
6	292	*- 4	1	254			174		
7	299	*- 6	1	272			182		
8	306	*- 8	3	290	*- 7	*	191		
9	313	1- 9	4	308	*-12	4	200		
10	320	1- 9	4	326	*-15	7	209		
11	327	1- 9	5	345	4-18	12	218		
12	334	2-10	7	363	7-21	15	226		
13	341	3-13	8	381	12-24	18	234		
14	348	3-16	9	399	15-28	21	243		
15	355	4-19	9	417	18-34	24	252		
16	362	6-25	10	435	21-39	28	261		
17	369	8-32	11	453	24-50	34	270		
18	376	9-38	14	471	28-62	39	278		
19	383	9-42	18	489	34-67	50	287		
20	390	9-46	22	507	39-70	62	295		
21	397	10-50	29	525	50-76	67	303		
22	404	13-52	36	543	62-83	70	312		
23	411	16-54	40	562	67-88	76	321		
24	418	19-55	44	580	70-95	83	330		
25	425	25-57	48	598	76-99	88	339		
26	432	32-58	52	616	83- *	95	347		
27	439	38-59	53	634	88- *	*	356		
28	446	42-61	54	652	95- *	*	365		
29	453	46-65	56	670			374		
30	460	50-68	58	686			382		

Third Grade

	Written			LC	OPT		
Raw	Stnd	Band	Mid		Stnd	Band	Mid
31	468	76-95	89		391		
32	475	78-96	92		400		
33	482	81-97	94		409		
34	489	85-98	96		417		
35	496	87-98	96		426		
36	503	90-98	96		434		
37	510	93-98	96		443		
38	517	95-98	97		452		
39	524	96-98	98		461		
40	531	96-98	98		470		
41	538	96-98	98		478		
42	545	97-98	98		487		
43	552	98- *	98		496		
44	559	98- *	98		504		
45	566	98- *	99		513		
46	573	98- *	*		522		
47	580				530		
48	587				539		
49	594				548		
50	601				557		
51	608				566		
52	615				574		
53	622				583		
54	629				591		
55	636				600		
56	643				609		
57	650				618		
58	657				626		
59	664				635		
60	672				644		
61	679						
62	686						
	Mean 19.2			Mean 8.3	Mean		
	SD 10.3			SD 4.9	SD		
	N 67			N 67	N		

Fourth Grade

	Written			LC	OPT		
Stnd	Band	Mid	Raw		Stnd	Band	Mid	Raw
468	53-71	58	31		391			31
475	54-73	60	32		400			32
482	55-75	63	33		409			33
489	57-76	67	34		417			34
496	58-76	70	35		426			35
503	59-76	72	36		434			36
510	62-77	74	37		443			37
517	65-79	76	38		452			38
524	68-81	76	39		461			39
531	71-83	76	40		470			40
538	73-83	76	41		478			41
545	75-85	78	42		487			42
552	75-87	80	43		496			43
559	76-88	82	44		504			44
566	76-89	83	45		513			45
573	77-90	84	46		522			46
580	79-91	86	47		530			47
587	81-93	88	48		539			48
594	83-93	88	49		548			49
601	83-93	90	50		557			50
608	85-94	91	51		566			51
615	87-95	92	52		574			52
622	88-97	93	53		583			53
629	89-99	93	54		591			54
636	90-99	93	55		600			55
643	91- *	94	56		609			56
650	92- *	96	57		618			57
657	93- *	98	58		626			58
664	93- *	99	59		635			59
672	94- *	*	60		644			60
679			61					
686			62					
Mean 29.8				Mean 18.6	Mean			
SD 13.5				SD 5.0	SD			
N 76				N 81	N			

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Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182	*- 3	*	139		
3	271			200	*- 4	2	148		
4	278	*- 3	*	218	*- 5	3	157		
5	285	*- 4	1	226	2- 6	4	166		
6	292	*- 4	2	254	3- 8	4	174		
7	299	*- 7	2	272	4- 9	5	182		
8	306	*- 8	3	290	4-10	8	191		
9	313	1-13	4	308	5-11	9	200		
10	320	2-15	5	326	8-14	10	209		
11	327	2-15	6	345	9-20	11	218		
12	334	2-15	8	363	10-24	14	226		
13	341	3-16	11	381	11-26	20	234		
14	348	3-21	14	399	14-30	24	243		
15	355	4-26	15	417	20-34	26	252		
16	362	6-27	15	435	24-37	30	261		
17	369	9-27	16	453	26-39	34	270		
18	376	14-28	17	471	30-44	37	278		
19	383	14-30	25	489	34-51	39	287		
20	390	15-31	26	507	37-56	44	295		
21	397	15-34	27	525	39-62	51	303		
22	404	16-38	28	543	44-69	56	312		
23	411	21-42	30	562	51-73	62	321		
24	418	26-44	31	580	56-82	69	330		
25	425	27-46	33	598	62-90	73	339		
26	432	27-51	37	616	69-93	82	347		
27	439	28-54	40	634	73-95	90	356		
28	446	30-56	43	652	82-98	93	365		
29	453	31-59	44	670	90- *	95	374		
30	460	34-61	48	686	93- *	98	382		

Sixth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290	*- 2	*	191		
9	313			308	*- 3	1	200		
10	320			326	*- 4	2	209		
11	327			345	1- 5	3	218		
12	334			363	2- 6	4	226		
13	341			381	3- 7	5	234		
14	348			399	4- 7	6	243		
15	355			417	5- 8	7	252		
16	362			435	6- 9	7	261		
17	369			453	7-11	8	270		
18	376			471	7-13	9	278		
19	383	*- 4	*	489	8-16	11	287		
20	390	*- 5	1	507	9-17	13	295		
21	397	*- 6	2	525	11-20	16	303		
22	404	*- 7	3	543	13-25	17	312		
23	411	*- 8	4	562	16-32	20	321		
24	418	1- 8	5	580	17-48	25	330		
25	425	2- 9	6	598	20-64	32	339		
26	432	3-12	6	616	25-80	48	347		
27	439	4-13	7	634	32-93	64	356		
28	446	5-14	8	652	48-98	80	365		
29	453	6-14	9	670	64- *	93	374		
30	460	6-14	11	686	80- *	98	382		

Fifth Grade

Written				LC	OPT			Raw
Raw	Stnd	Band	Mid		Stnd	Band	Mid	
31	468	38-63	53		391			31
32	475	42-65	55		400			32
33	482	44-66	58		409			33
34	489	46-67	60		417			34
35	496	50-67	62		426			35
36	503	54-67	64		434			36
37	510	56-69	66		443			37
38	517	59-72	68		452			38
39	524	61-75	68		461			39
40	531	63-77	68		470			40
41	538	65-79	68		478			41
42	545	67-79	70		487			42
43	552	67-80	73		496			43
44	559	67-80	76		504			44
45	566	68-81	78		513			45
46	573	69-83	79		522			46
47	580	72-85	79		530			47
48	587	75-87	80		539			48
49	594	77-89	80		548			49
50	601	79-92	82		557			50
51	608	79-94	84		566			51
52	615	80-94	86		574			52
53	622	80-95	88		583			53
54	629	81-97	90		591			54
55	636	83-99	93		600			55
56	643	85- *	94		609			56
57	650	87- *	94		618			57
58	657	89- *	95		626			58
59	664	92- *	98		635			59
60	672	94- *	*		644			60
61	679							61
62	686							62
	Mean 32.0			Mean 19.5	Mean			
	SD 14.8			SD 6.8	SD			
	N 52			N 52	N			

Sixth Grade

Written			LC	OPT			
Stnd	Band	Mid		Stnd	Band	Mid	Raw
468	6-14	12		391			31
475	7-14	13		400			32
482	7-17	14		409			33
489	9-19	14		417			34
496	11-21	14		426			35
503	12-22	15		434			36
510	13-24	17		443			37
517	13-26	19		452			38
524	14-29	20		461			39
531	15-31	21		470			40
538	15-33	22		478			41
545	18-36	25		487			42
552	19-39	27		496			43
559	21-39	30		504			44
566	22-39	31		513			45
573	24-42	34		522			46
580	26-47	38		530			47
587	29-50	39		539			48
594	31-51	39		548			49
601	33-54	39		557			50
608	36-60	44		566			51
615	39-67	50		574			52
622	39-74	50		583			53
629	39-81	52		591			54
636	42-90	56		600			55
643	47-94	63		609			56
650	50-97	70		618			57
657	51-99	78		626			58
664	54- *	86		635			59
672	60- *	93		644			60
679	66- *	96					61
686	74- *	98					62
Mean 48.6			Mean 24.9	Mean			
SD 12.1			SD 4.4	SD			
N 66			N 65	N			

ESKIMO

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257	*- 3	1	164	*- 2	*	130		
2	264	*- 4	2	182	*- 2	2	139		
3	271	*- 5	2	200	*- 2	2	148		
4	278	*- 7	3	218	1- 3	2	157		
5	285	*- 9	3	226	2- 4	3	166		
6	292	1-10	3	254	2- 9	3	174	*- 5	*
7	299	2-13	4	272	3-14	4	182	*- 6	1
8	306	2-15	6	290	3-20	9	191	*- 6	2
9	313	2-17	8	308	4-25	14	200	*- 7	3
10	320	3-20	10	326	9-30	20	209	*- 7	3
11	327	4-23	12	345	14-36	25	218	*- 8	4
12	334	5-27	14	363	20-41	30	226	*- 9	5
13	341	7-30	17	381	25-45	36	234	1-12	6
14	348	9-35	18	399	30-48	41	243	2-15	6
15	355	10-39	21	417	36-56	45	252	3-18	7
16	362	13-43	25	435	41-61	48	261	3-19	7
17	369	15-49	28	453	45-68	56	270	4-20	8
18	376	17-52	33	471	48-72	61	278	5-21	9
19	383	19-56	38	489	56-76	68	287	6-23	12
20	390	23-59	42	507	61-81	72	295	6-24	15
21	397	27-63	46	525	68-85	76	303	7-26	18
22	404	30-66	51	543	72-87	81	312	7-30	19
23	411	35-68	54	562	76-90	85	321	8-32	20
24	418	39-70	58	580	81-94	87	330	9-33	21
25	425	43-72	61	598	85-96	90	339	12-35	23
26	432	48-74	65	616	87-98	94	347	15-36	24
27	439	52-75	67	634	90-99	96	356	18-38	26
28	446	56-77	69	652	94- *	98	365	19-40	30
29	453	59-78	72	670	96- *	99	374	20-41	32
30	460	63-79	73	686	98- *	*	382	21-43	33

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271	*- 2	*	200			148	*- 2	*
4	278	*- 2	1	218			157	*- 2	1
5	285	*- 3	1	226	*- 2	*	166	*- 2	1
6	292	*- 3	1	254	*- 3	1	174	*- 2	1
7	299	*- 4	2	272	*- 4	2	182	*- 3	1
8	306	1- 5	2	290	1- 7	3	191	*- 3	2
9	313	1- 6	3	308	2-11	4	200	*- 3	2
10	320	1- 7	3	326	3-13	7	209	1- 4	2
11	327	1- 9	4	345	4-15	11	218	1- 4	2
12	334	2-11	5	363	7-20	13	226	1- 4	3
13	341	2-14	5	381	11-24	15	234	1- 5	3
14	348	3-17	6	399	13-28	20	243	2- 5	3
15	355	3-20	8	417	15-32	24	252	2- 6	4
16	362	4-21	9	435	20-37	28	261	2- 6	4
17	369	5-23	13	453	24-44	32	270	2- 7	4
18	376	6-25	15	471	28-50	37	278	3- 7	5
19	383	7-26	20	489	32-56	44	287	3- 8	5
20	390	9-29	21	507	37-66	50	295	3- 9	6
21	397	11-33	22	525	44-74	56	303	4-10	6
22	404	14-35	24	543	50-80	66	312	4-11	7
23	411	17-37	25	562	56-85	74	321	4-12	7
24	418	20-39	28	580	66-90	80	330	5-13	8
25	425	21-41	31	598	74-94	85	339	5-14	8
26	432	23-42	34	616	80-98	90	347	6-16	9
27	439	25-44	36	634	85-99	94	356	6-18	10
28	446	26-48	38	652	90- *	98	365	7-20	11
29	453	29-50	40	670	94- *	99	374	7-22	12
30	460	33-53	41	686	98- *	*	382	8-24	13

Third Grade

	Written			LC	OPT			Raw
Raw	Stnd	Band	Mid		Stnd	Band	Mid	
31	468	66-81	74		391	23-44	35	
32	475	68-83	76		400	24-45	36	
33	482	70-84	77		409	26-48	38	
34	489	72-85	78		417	30-52	40	
35	496	74-86	80		426	32-54	41	
36	503	75-87	82		434	33-57	43	
37	510	77-88	83		443	35-59	44	
38	517	78-89	84		452	36-60	45	
39	524	79-91	85		461	38-61	48	
40	531	81-91	86		470	40-62	52	
41	538	83-92	87		478	41-64	54	
42	545	84-93	88		487	43-68	57	
43	552	85-94	90		496	44-70	59	
44	559	86-95	91		504	45-72	60	
45	566	87-96	92		513	48-74	61	
46	573	88-96	93		522	52-75	62	
47	580	89-96	94		530	54-78	64	
48	587	90-97	95		539	57-83	68	
49	594	91-97	95		548	59-87	70	
50	601	92-98	96		557	60-89	72	
51	608	93-98	96		566	61-90	74	
52	615	94-99	97		574	62-91	75	
53	622	95- *	97		583	64-93	78	
54	629	95- *	98		591	68-97	83	
55	636	96- *	98		600	70- *	87	
56	643	96- *	99		609	72- *	89	
57	650	97- *	*		618	74- *	90	
58	657				626	75- *	91	
59	664				635	78- *	93	
60	672				644	83- *	97	
61	679							
62	686							
	Mean 24.4			Mean 15.3	Mean 37.8			
	SD 12.5			SD 6.06	SD 14.6			
	N 236			N 236	N 72			

Fourth Grade

	Written			LC	OPT			Raw
	Stnd	Band	Mid		Stnd	Band	Mid	
	468	35-55	44		391	8-27	14	31
	475	37-57	46		400	9-32	16	32
	482	39-59	49		409	10-35	18	33
	489	41-61	51		417	11-36	20	34
	496	42-62	54		426	12-39	22	35
	503	45-64	57		434	13-43	24	36
	510	48-67	58		443	14-46	27	37
	517	50-70	60		452	16-48	32	38
	524	52-72	62		461	18-49	35	39
	531	56-73	64		470	20-52	36	40
	538	58-75	66		478	22-55	39	41
	545	59-77	68		487	24-59	43	42
	552	61-78	70		496	27-63	46	43
	559	63-80	72		504	32-66	48	44
	566	65-81	74		513	35-68	49	45
	573	67-82	76		522	36-70	52	46
	580	70-84	78		530	39-72	55	47
	587	72-86	79		539	43-76	59	48
	594	73-88	80		548	46-79	63	49
	601	75-89	81		557	48-84	66	50
	608	77-92	82		566	49-90	68	51
	615	78-96	84		574	52-94	70	52
	622	80-98	86		583	55-97	72	53
	629	81-98	88		591	59-98	76	54
	636	82-99	90		600	63- *	79	55
	643	84- *	95		609	66- *	84	56
	650	86- *	97		618	68- *	90	57
	657	88- *	98		626	70- *	94	58
	664	89- *	*		635	72- *	97	59
	672				644	76- *	98	60
	679							61
	686							62
	Mean 34.4			Mean 19.1	Mean 43.1			
	SD 14.7			SD 5.3	SD 12.1			
	N 232			N 277	N 69			

ESKIMO

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148	*- 2	*
4	278			218			157	*- 2	1
5	285			226			166	*- 2	1
6	292			254	*- 3	*	174	*- 3	1
7	299			272	*- 5	2	182	*- 3	1
8	306	*- 2	*	290	*- 7	3	191	*- 3	2
9	313	*- 2	1	308	2- 9	5	200	*- 4	2
10	320	*- 3	1	326	3-11	7	209	*- 4	2
11	327	*- 3	1	345	5-14	9	218	1- 4	2
12	334	*- 4	2	363	7-16	11	226	1- 4	3
13	341	1- 4	2	381	9-19	14	234	1- 5	3
14	348	1- 5	2	399	11-22	16	243	2- 5	3
15	355	1- 6	3	417	14-25	19	252	2- 6	4
16	362	1- 7	3	435	16-29	22	261	2- 6	4
17	369	1- 9	3	453	19-32	25	270	2- 6	4
18	376	1-11	4	471	22-36	29	278	3- 7	4
19	383	2-12	5	489	25-43	32	287	3- 7	5
20	390	3-14	6	507	29-45	36	295	3- 7	5
21	397	3-15	8	525	32-57	43	303	4- 8	6
22	404	3-17	10	543	36-66	45	312	4- 8	6
23	411	4-19	12	562	43-73	57	321	4- 9	6
24	418	5-20	13	580	45-79	66	330	4-10	7
25	425	7-22	14	598	57-87	73	339	5-11	7
26	432	9-25	16	616	66-90	79	347	5-12	7
27	439	11-27	18	634	73-96	87	356	6-13	8
28	446	12-28	20	652	79-99	90	365	6-14	8
29	453	14-29	21	670	87- *	96	374	6-15	9
30	460	15-31	24	686	90- *	*	382	7-18	10

Sixth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290			191		
9	313			308			200		
10	320			326			209		
11	327			345	*- 3	*	218		
12	334			363	*- 5	2	226		
13	341			381	*- 7	3	234		
14	348	*- 2	*	399	2- 9	5	243		
15	355	*- 2	1	417	3-12	7	252		
16	362	*- 3	1	435	5-16	9	261	*- 3	*
17	369	*- 3	1	453	7-18	12	270	*- 4	1
18	376	*- 3	2	471	9-22	16	278	*- 4	1
19	383	1- 4	2	489	12-27	18	287	*- 4	2
20	390	1- 5	2	507	16-33	22	295	*- 5	2
21	397	1- 7	3	525	18-40	27	303	*- 5	3
22	404	1- 8	3	543	22-49	33	312	*- 6	3
23	411	2- 9	3	562	27-61	40	321	1- 6	4
24	418	2-11	4	580	33-71	49	330	1- 7	4
25	425	3-12	7	598	40-82	61	339	2- 8	4
26	432	3-13	8	616	49-89	71	347	2- 9	5
27	439	3-15	9	634	61-95	82	356	3-10	5
28	446	4-16	11	652	71-99	89	365	3-11	6
29	453	6-17	12	670	82- *	95	374	4-12	6
30	460	7-18	13	686	89- *	99	382	4-13	7

Fifth Grade

	Written			LC	OPT		
Raw	Stnd	Band	Mid		Stnd	Band	Mid
31	468	17-33	26		391	7-20	11
32	475	19-35	28		400	7-23	12
33	482	20-37	29		409	8-26	13
34	489	22-39	30		417	8-28	14
35	496	25-41	32		426	9-30	15
36	503	27-44	34		434	10-32	18
37	510	28-48	37		443	11-34	20
38	517	29-50	38		452	12-36	23
39	524	31-52	40		461	13-40	26
40	531	33-55	42		470	14-44	28
41	538	35-57	46		478	15-48	30
42	545	37-58	49		487	18-53	32
43	552	38-61	52		496	20-57	34
44	559	41-66	54		504	23-61	36
45	566	44-69	56		513	26-66	40
46	573	48-72	57		522	28-71	44
47	580	50-75	58		530	30-75	48
48	587	52-68	64		539	32-79	53
49	594	55-81	68		548	34-83	57
50	601	57-84	70		557	33-88	61
51	608	58-87	73		566	40-91	66
52	615	62-91	76		574	44-94	71
53	622	66-93	80		583	48-96	75
54	629	69-95	83		591	53-98	79
55	636	72-97	86		600	57- *	83
56	643	75-99	89		609	61- *	88
57	650	78- *	92		618	66- *	91
58	657	81- *	94		626	71- *	94
59	664	84- *	96		635	75- *	96
60	672	87- *	98		644	79- *	98
61	679	91- *	*				
62	686						
	Mean 41.9			Mean 20.8	Mean 44.8		
	SD 13.0			SD 6.0	SD 12.1		
	N 189			N 236	N 64		

Sixth Grade

	Written			LC	OPT		
	Stnd	Band	Mid		Stnd	Band	Mid
	468	8-19	14		391	4-16	8
	475	9-19	15		400	5-19	9
	482	11-20	16		409	5-23	10
	489	12-21	17		417	6-26	11
	496	13-23	18		426	6-28	12
	503	15-26	19		434	7-30	13
	510	16-29	20		443	8-33	16
	517	17-32	21		452	9-37	19
	524	18-34	23		461	10-41	23
	531	19-37	25		470	11-44	26
	538	19-39	27		478	12-47	28
	545	20-41	30		487	13-53	30
	552	21-43	34		496	16-59	33
	559	23-46	36		504	19-62	37
	566	26-49	38		513	23-66	41
	573	28-53	40		522	26-70	44
	580	32-56	42		530	28-73	47
	587	34-58	45		539	30-76	53
	594	37-62	48		548	33-79	59
	601	39-67	52		557	37-83	62
	608	41-71	55		566	41-88	66
	615	43-76	57		574	44-93	70
	622	46-81	60		583	47-95	73
	629	48-87	64		591	53-98	76
	636	53-93	69		600	59- *	79
	643	56-96	74		609	62- *	83
	650	58-99	78		618	66- *	88
	657	62- *	84		626	70- *	93
	664	67- *	90		635	73- *	95
	672	72- *	96		644	76- *	98
	679	75- *	98				
	686	81- *	*				
	Mean 46.4			Mean 22.9	Mean 45.9		
	SD 12.0			SD 4.7	SD 9.4		
	N 179			N 220	N 62		

Third Grade

	Written			LC			OPT		
Raw	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285	*- 5	*	226			166		
6	292	*- 9	1	254			174		
7	299	*-12	2	272			182		
8	306	*-14	2	290			191		
9	313	*-15	4	308	*- 3	*	200		
10	320	1-17	7	326	*- 7	1	209		
11	327	1-19	12	345	1- 9	3	218		
12	334	1-21	14	363	1-12	7	226		
13	341	2-25	14	381	3-18	9	234		
14	348	5-28	16	399	7-23	12	243		
15	355	9-32	19	417	9-34	18	252		
16	362	12-35	20	435	12-44	23	261		
17	369	14-38	22	453	18-49	34	270		
18	376	15-43	27	471	23-55	44	278		
19	383	17-48	30	489	34-63	49	287		
20	390	19-52	33	507	44-70	55	295		
21	397	21-55	37	525	49-76	63	303		
22	404	25-58	40	543	55-80	70	312		
23	411	28-61	46	562	63-85	76	321		
24	418	32-63	50	580	70-92	80	330		
25	425	35-65	53	598	76-96	85	339		
26	432	39-66	56	616	80-99	92	347		
27	439	43-67	59	634	85- *	96	356		
28	446	48-69	62	652	92- *	*	365		
29	453	52-71	64	670			374		
30	460	55-73	66	686			382		

Fourth Grade

	Written			LC			OPT		
Raw	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290			191		
9	313			308			200		
10	320			326			209		
11	327			345	*- 4	*	218		
12	334			363	*- 5	2	226		
13	341	*- 2	*	381	*- 8	4	234		
14	348	*- 4	1	399	2-11	5	243		
15	355	*- 5	1	417	4-12	8	252		
16	362	*- 5	1	435	5-14	11	261		
17	369	*- 5	2	453	8-17	12	270		
18	376	1- 6	4	471	11-22	14	278		
19	383	1- 6	4	489	12-31	17	287		
20	390	1- 7	6	507	14-42	22	295		
21	397	1- 9	6	525	17-50	31	303		
22	404	3- 9	6	543	22-59	42	312		
23	411	4-11	6	562	31-70	50	321		
24	418	5-12	7	580	42-79	59	330		
25	425	5-13	8	598	50-86	70	339		
26	432	5-15	10	616	59-93	79	347		
27	439	6-16	10	634	70-97	86	356		
28	446	6-18	13	652	79-99	93	365		
29	453	7-21	13	670	86- *	97	374		
30	460	9-23	15	686	93- *	99	382		

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	58-75	66		391		
32	475	61-77	68		400		
33	482	63-77	70		409		
34	489	65-78	72		417		
35	496	66-80	74		426		
36	503	67-81	76		434		
37	510	69-83	77		443		
38	517	71-85	78		452		
39	524	73-87	79		461		
40	531	75-88	80		470		
41	538	77-89	82		478		
42	545	77-90	84		487		
43	552	78-92	86		496		
44	559	80-93	87		504		
45	566	81-94	88		513		
46	573	83-94	90		522		
47	580	85-95	91		530		
48	587	87-95	92		539		
49	594	88-96	93		548		
50	601	89-97	94		557		
51	608	90-98	94		566		
52	615	92-99	95		574		
53	622	93- *	96		583		
54	629	94- *	96		591		
55	636	94- *	98		600		
56	643	95- *	98		609		
57	650	95- *	*		618		
58	657				626		
59	664				635		
60	672				644		
61	679						
62	686						
	Mean 26.8			Mean 19.2	Mean		
	SD 12.6			SD 4.8	SD		
	N 109			N 107	N		

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	10-24	16		391		
32	475	11-24	18		400		
33	482	12-25	20		409		
34	489	13-26	22		417		
35	496	15-29	23		426		
36	503	17-31	24		434		
37	510	19-32	25		443		
38	517	21-34	25		452		
39	524	23-37	28		461		
40	531	24-39	31		470		
41	538	24-41	32		478		
42	545	25-44	33		487		
43	552	26-49	36		496		
44	559	29-53	37		504		
45	566	31-57	40		513		
46	573	32-59	42		522		
47	580	35-61	46		530		
48	587	37-64	51		539		
49	594	39-67	55		548		
50	601	41-71	58		557		
51	608	44-77	61		566		
52	615	49-82	62		574		
53	622	53-86	65		583		
54	629	57-88	69		591		
55	636	59-91	74		600		
56	643	61-95	79		609		
57	650	64- *	85		618		
58	657	67- *	88		626		
59	664	71- *	89		635		
60	672	77- *	94		644		
61	679	82- *	99				
62	686	86- *	*				
	Mean 45.1			Mean 22.5	Mean		
	SD 12.5			SD 4.4	SD		
	N 79			N 85	N		

HOPI

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290			191		
9	313			308			200		
10	320			326			209		
11	327			345			218		
12	334			363			226		
13	341			381			234		
14	348			399			243		
15	355			417			252		
16	362			435	*- 4	*	261		
17	369			453	*- 8	2	270		
18	376			471	*-11	4	278		
19	383			489	2-18	8	287		
20	390			507	4-23	11	295		
21	397			525	8-29	18	303		
22	404			543	11-36	23	312		
23	411			562	18-40	29	321		
24	418			580	23-52	36	330		
25	425			598	29-67	40	339		
26	432			616	36-82	52	347		
27	439			634	40-93	67	356		
28	446			652	52-98	82	365		
29	453			670	67-99	93	374		
30	460			686	82- *	98	382		

Sixth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290			191		
9	313			308			200		
10	320			326			209		
11	327			345			218		
12	334			363			226		
13	341			381			234		
14	348			399			243		
15	355			417			252		
16	362			435			261		
17	369			453	*- 4	*	270		
18	376			471	*- 6	2	278		
19	383			489	*- 9	4	287		
20	390			507	2-12	6	295		
21	397	*- 6	*	525	4-16	9	303		
22	404	*- 7	2	543	6-22	12	312		
23	411	*- 8	3	562	9-32	16	321		
24	418	*- 9	4	580	12-45	22	330		
25	425	*- 9	5	598	16-61	32	339		
26	432	1-10	6	616	22-74	45	347		
27	439	2-10	7	634	32-86	61	356		
28	446	4-11	8	652	45-97	74	365		
29	453	5-11	9	670	61- *	86	374		
30	460	6-11	9	686	74- *	97	382		

Fifth Grade

	Written			LC	OPT		
Raw	Stnd	Band	Mid		Stnd	Band	Mid
31	468				391		
32	475				400		
33	482	*- 7	*		409		
34	489	*- 8	3		417		
35	496	*- 9	4		426		
36	503	*-12	5		434		
37	510	*-15	6		443		
38	517	3-18	8		452		
39	524	5-21	9		461		
40	531	5-23	11		470		
41	538	6-25	13		478		
42	545	7-27	16		487		
43	552	8-31	19		496		
44	559	9-34	21		504		
45	566	12-37	24		513		
46	573	15-45	26		522		
47	580	17-53	30		530		
48	587	20-59	33		539		
49	594	23-61	35		548		
50	601	25-62	40		557		
51	608	28-64	49		566		
52	615	31-68	57		574		
53	622	34-75	61		583		
54	629	37-81	62		591		
55	636	45-86	64		600		
56	643	53-91	65		609		
57	650	59-97	70		618		
58	657	61- *	78		626		
59	664	62- *	83		635		
60	672	64- *	88		644		
61	679	68- *	94				
62	686	74- *	*				
	Mean 51.0			Mean 24.8	Mean		
	SD 7.9			SD 3.5	SD		
	N 56			N 57	N		

Sixth Grade

	Written			LC	OPT			
Stnd	Band	Mid		Stnd	Band	Mid	Raw
468	7-12	10		391			31
475	8-12	10		400			32
482	9-12	11		409			33
489	9-13	11		417			34
496	10-13	11		426			35
503	10-14	12		434			36
510	11-14	12		443			37
517	11-15	12		452			38
524	11-16	13		461			39
531	12-17	13		470			40
538	12-18	14		478			41
545	12-20	14		487			42
552	13-21	15		496			43
559	13-22	16		504			44
566	14-23	17		513			45
573	14-25	18		522			46
580	15-29	20		530			47
587	16-35	21		539			48
594	17-40	22		548			49
601	18-45	24		557			50
608	19-50	27		566			51
615	20-65	33		574			52
622	22-77	39		583			53
629	23-81	42		591			54
636	25-84	48		600			55
643	29-89	53		609			56
650	35-94	76		618			57
657	40-96	79		626			58
664	45- *	82		635			59
672	50- *	86		644			60
679	57- *	92					61
686	78- *	96					62
Mean 51.7			Mean 25.9	Mean			
SD 11.1			SD 3.0	SD			
N 75			N 81	N			

Third Grade

	Written			LC			OPT			
Raw	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	
1	257			164			130	*- 3	*	1
2	264			182	*- 2	*	139	*- 3	2	2
3	271	*- 5	*	200	*- 2	1	148	*- 4	2	3
4	278	*- 6	1	218	*- 4	2	157	*- 5	2	4
5	285	*- 8	3	226	1- 6	2	166	*- 6	2	5
6	292	*-10	3	254	2- 9	4	174	*- 6	3	6
7	299	*-12	4	272	2-14	6	182	*- 7	3	7
8	306	1-14	6	290	4-19	9	191	1- 9	3	8
9	313	2-16	7	308	6-25	14	200	2-11	4	9
10	320	3-18	9	326	9-32	19	209	2-12	5	10
11	327	4-22	10	345	14-38	25	218	3-14	6	11
12	334	5-25	14	363	19-45	32	226	3-15	6	12
13	341	6-30	15	381	25-54	38	234	3-17	7	13
14	348	8-36	18	399	32-64	45	243	3-18	9	14
15	355	9-40	20	417	38-68	54	252	4-20	11	15
16	362	12-49	24	435	45-74	62	261	5-21	12	16
17	369	14-55	29	453	54-80	68	270	6-23	14	17
18	376	16-61	33	471	62-84	74	278	6-24	15	18
19	383	19-66	38	489	68-88	80	287	7-26	17	19
20	390	23-72	44	507	74-91	84	295	9-28	18	20
21	397	26-76	52	525	80-94	88	303	11-29	20	21
22	404	30-79	58	543	84-96	91	312	12-31	21	22
23	411	36-81	64	562	88-98	94	321	14-34	23	23
24	418	40-83	69	580	91- *	96	330	15-35	24	24
25	425	47-85	74	598	94- *	98	339	17-37	26	25
26	432	55-87	78	616	96- *	*	347	18-39	28	26
27	439	61-89	80	634	98- *	*	356	20-40	29	27
28	446	68-90	82	652	99- *	*	365	22-42	31	28
29	453	71-92	84	670			374	23-44	34	29
30	460	75-93	86	686			382	24-46	35	30

Fourth Grade

	Written			LC			OPT			
Raw	Stnd	Band	Mid	Stnd	Band	Mid	Stnd	Band	Mid	
1	257			164			130			1
2	264			182			139			2
3	271			200			148			3
4	278			218			157			4
5	285	*- 3	*	226			166			5
6	292	*- 4	1	254	*- 3	*	174			6
7	299	*- 5	1	272	*- 5	2	182	*- 3	*	7
8	306	*- 6	2	290	*- 8	3	191	*- 3	1	8
9	313	*- 8	2	308	2-12	5	200	*- 3	1	9
10	320	*- 9	4	326	3-16	8	209	*- 4	2	10
11	327	1-10	5	345	5-21	12	218	*- 5	2	11
12	334	2-13	5	363	8-26	16	226	*- 6	3	12
13	341	2-16	7	381	12-31	21	234	*- 7	3	13
14	348	3-20	8	399	16-36	26	243	1- 8	3	14
15	355	4-23	10	417	21-43	31	252	1- 9	3	15
16	362	5-27	12	435	26-50	36	261	1-10	4	16
17	369	6-32	15	453	31-56	43	270	2-10	5	17
18	376	8-36	18	471	36-63	50	278	3-12	6	18
19	383	9-41	21	489	43-70	56	287	3-12	7	19
20	390	11-44	25	507	50-76	63	295	3-14	8	20
21	397	13-48	30	525	56-82	70	303	3-15	9	21
22	404	20-51	35	543	63-87	76	312	4-16	10	22
23	411	23-54	39	562	70-91	82	321	5-18	10	23
24	418	23-58	43	580	76-95	87	330	6-19	12	24
25	425	27-60	46	598	82-97	91	339	7-20	12	25
26	432	32-63	50	616	87-98	95	347	8-22	14	26
27	439	37-65	52	634	91-99	97	356	9-25	15	27
28	446	41-67	56	652	95- *	98	365	10-26	16	28
29	453	45-70	60	670	97- *	*	374	10-27	18	29
30	460	48-72	62	686	98- *	*	382	12-29	19	30

Third Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	79-93	88		391	26-49	37
32	475	81-94	89		400	28-52	39
33	482	83-94	92		409	29-56	40
34	489	85-94	92		417	31-59	42
35	496	87-95	93		426	34-62	44
36	503	89-95	94		434	35-66	46
37	510	90-96	94		443	37-68	49
38	517	92-96	94		452	39-70	52
39	524	93-96	95		461	40-72	56
40	531	93-97	96		470	42-76	59
41	538	94-97	96		478	43-78	62
42	545	94-97	96		487	46-82	66
43	552	94-98	97		496	49-86	68
44	559	95-98	97		504	52-88	70
45	566	95-98	97		513	56-91	72
46	573	96-98	98		522	59-92	76
47	580	96-98	98		530	62-94	78
48	587	96-99	98		539	66-95	82
49	594	97- *	98		548	68-96	86
50	601	97- *	99		557	70-97	88
51	608	97- *	99		566	72-98	91
52	615	98- *	*		574	76-99	92
53	622	98- *	*		583	78-99	94
54	629	98- *	*		591	82- *	95
55	636	99- *	*		600	86- *	96
56	643				609	88- *	97
57	650				618	91- *	98
58	657				626	92- *	98
59	664				635	94- *	99
60	672				644	95- *	*
61	679						
62	686						
	Mean 21.5			Mean 15.1	Mean 34.8		
	SD 9.2			SD 5.2	SD 13.8		
	N 1,370			N 1,357	N 451		

Fourth Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	51-74	64		391	12-32	20
32	475	54-74	67		400	14-35	22
33	482	58-75	69		409	15-37	25
34	489	61-76	71		417	16-39	26
35	496	63-78	73		426	18-43	27
36	503	65-81	74		434	19-46	29
37	510	68-83	75		443	20-50	32
38	517	70-85	76		452	22-54	35
39	524	72-86	76		461	25-58	37
40	531	74-87	80		470	26-62	39
41	538	74-88	81		478	27-67	43
42	545	75-89	85		487	30-70	46
43	552	76-91	86		496	32-75	50
44	559	78-92	87		504	35-78	54
45	566	81-93	88		513	37-82	58
46	573	84-94	89		522	39-84	62
47	580	85-94	90		530	43-86	67
48	587	86-95	92		539	46-88	71
49	594	87-96	92		548	50-91	75
50	601	89-97	94		557	54-93	78
51	608	90-98	94		566	58-95	82
52	615	91-98	95		574	62-96	84
53	622	92-98	96		583	67-97	86
54	629	93-98	96		591	70-99	88
55	636	94-99	97		600	75- *	91
56	643	94- *	98		609	78- *	93
57	650	95- *	99		618	82- *	95
58	657	96- *	99		626	84- *	96
59	664	97- *	*		635	86- *	97
60	672	98- *	*		644	91- *	99
61	679	98- *	*				
62	686	98- *	*				
	Mean 28.6			Mean 17.8	Mean 40.5		
	SD 12.1			SD 5.0	SD 12.1		
	N 1,497			N 1,483	N 475		

NAVAJO

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174	*- 1	*
7	299			272	*- 3	*	182	*- 1	1
8	306			290	*- 4	2	191	*- 2	1
9	313			303	*- 6	3	200	*- 2	1
10	320	*- 4	*	326	2- 8	4	209	*- 3	1
11	327	*- 5	1	345	3-11	6	218	*- 3	1
12	334	*- 7	2	363	4-14	8	226	*- 3	1
13	341	*- 9	2	381	6-18	11	234	1- 4	1
14	348	*-11	3	399	8-23	14	243	1- 4	2
15	355	1-13	4	417	11-28	18	252	1- 5	2
16	362	1-15	6	435	14-32	23	261	1- 6	3
17	369	2-18	8	453	18-38	28	270	1- 6	3
18	376	3-20	10	471	23-44	32	278	1- 7	3
19	383	4-	12	489	28-52	38	287	1- 8	4
20	390	5-	14	507	32-60	44	295	2-10	4
21	397	6-28	17	525	38-67	52	303	2-11	5
22	404	8-32	20	543	44-75	60	312	3-12	6
23	411	10-34	22	562	52-82	67	321	3-13	6
24	418	12-36	25	580	60-88	75	330	3-13	7
25	425	15-40	28	598	67-94	82	339	4-14	8
26	432	17-41	30	616	75-97	88	347	4-16	10
27	439	20-44	33	634	82-99	94	356	5-18	11
28	446	24-46	36	652	88- *	97	365	6-19	12
29	453	26-48	38	670	94- *	99	374	6-20	13
30	460	28-50	40	688	97- *	*	382	7-22	13

Sixth Grade

Raw	Written Stnd	Written Band	Written Mid	LC Stnd	LC Band	LC Mid	OPT Stnd	OPT Band	OPT Mid
1	257			164			130		
2	264			182			139		
3	271			200			148		
4	278			218			157		
5	285			226			166		
6	292			254			174		
7	299			272			182		
8	306			290			191	*- 1	*
9	313			308			200	*- 2	1
10	320			326	*- 3	*	209	*- 2	1
11	327			345	*- 5	2	218	*- 2	1
12	334			363	*- 7	3	226	*- 3	1
13	341	*- 4	*	381	2- 9	5	234	*- 4	1
14	348	*- 5	1	399	3-12	7	243	*- 4	1
15	355	*- 6	2	417	5-15	9	252	1- 4	2
16	362	*- 8	3	435	7-19	12	261	1- 4	2
17	369	*- 9	4	453	9-24	15	270	1- 5	2
18	376	*-10	5	471	12-30	19	278	1- 5	3
19	383	2-13	6	489	15-36	24	287	1- 5	4
20	390	2-14	7	507	19-43	30	295	1- 5	4
21	397	3-16	9	525	24-52	36	303	2- 5	4
22	404	4-17	10	543	30-61	43	312	2- 6	4
23	411	5-19	12	562	36-70	52	321	2- 7	5
24	418	6-21	13	580	43-80	61	330	3- 7	5
25	425	8-23	15	598	52-88	70	339	4- 8	5
26	432	9-25	17	616	61-94	80	347	4- 9	5
27	439	11-27	18	634	70-98	88	356	4-10	5
28	446	12-29	21	652	80- *	94	365	4-10	6
29	453	14-32	22	670	88- *	98	374	5-12	7
30	460	15-34	24	686	94- *	*	382	5-14	7

Fifth Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	32-52	42		391	8-26	14
32	475	34-54	46		400	10-28	16
33	482	36-56	48		409	11-30	18
34	489	41-58	49		417	12-33	19
35	496	44-61	51		426	13-36	20
36	503	45-63	53		434	13-39	22
37	510	46-65	55		443	14-41	26
38	517	48-68	57		452	16-44	28
39	524	50-70	60		461	18-48	30
40	531	52-72	62		470	19-52	33
41	538	55-74	64		478	20-56	36
42	545	56-77	67		487	22-62	39
43	552	58-79	69		496	26-67	41
44	559	61-81	71		504	28-70	44
45	566	64-83	74		513	30-73	48
46	573	65-85	76		522	33-74	52
47	580	68-87	78		530	36-80	56
48	587	70-89	80		539	39-84	62
49	594	72-90	82		548	41-87	67
50	601	75-92	84		557	44-90	70
51	608	77-94	86		566	48-92	73
52	615	79-95	88		574	52-96	74
53	622	81-96	90		583	56-98	80
54	629	83-98	92		591	62-99	84
55	636	85-98	93		600	67- *	87
56	643	87-99	94		609	70- *	90
57	650	89- *	96		618	73- *	92
58	657	90- *	97		626	74- *	96
59	664	92- *	98		635	80- *	98
60	672	94- *	99		644	84- *	99
61	679	95- *	*				
62	686	96- *	*				
	Mean 35.1			Mean 20.0	Mean 43.0		
	SD 12.9			SD 5.3	SD 11.4		
	N 1,339			N 1,326	N 440		

Sixth Grade

Raw	Written Stnd	Written Band	Written Mid	LC	OPT Stnd	OPT Band	OPT Mid
31	468	17-36	26		391	5-16	8
32	475	19-38	28		400	5-18	9
33	482	21-40	31		409	5-20	10
34	489	23-41	33		417	6-22	10
35	496	25-43	35		426	7-24	12
36	503	27-46	38		434	7-26	14
37	510	29-48	39		443	8-28	16
38	517	32-51	41		452	9-31	18
39	524	34-53	43		461	10-34	20
40	531	36-55	45		470	10-38	22
41	538	39-58	47		478	12-42	24
42	545	40-60	50		487	14-45	26
43	552	41-63	52		496	16-49	28
44	559	43-66	54		504	18-54	31
45	566	46-68	57		513	20-59	34
46	573	48-71	59		522	22-65	38
47	580	51-74	62		530	24-69	42
48	587	53-76	65		539	26-74	45
49	594	55-80	67		548	28-80	49
50	601	58-82	70		557	31-84	54
51	608	60-86	72		566	34-87	59
52	615	63-88	75		574	38-91	65
53	622	66-91	78		583	42-94	69
54	629	68-93	81		591	45-98	74
55	636	71-95	83		600	49- *	80
56	643	74-97	87		609	54- *	84
57	650	76-99	90		618	59- *	87
58	657	80- *	91		626	65- *	91
59	664	82- *	95		635	69- *	94
60	672	86- *	96		644	74- *	98
61	679	89- *	98				
62	686	91- *	99				
	Mean 40.8			Mean 21.7	Mean 46.7		
	SD 13.0			SD 4.7	SD 10.6		
	N 1,302			N 1,300	N 418		

SECTION III

Sections I and II of this interpretive manual consider the use of test results in decision making and provide information necessary to interpret scores. Section III provides a discussion of test technique selection and item validation studies, and also gives information on the calculation of the statistical data.

Test Technique Selection

The basic goals of the test development project were formulated in the summer of 1968, when a series of planning meetings, attended by ELTP staff, BIA staff and project consultants were held. At these meetings it was decided that primary importance should be given to developing a test of English proficiency for grades four, five and six. These grades were selected on the basis of data presented at the meetings about student motivation and attendance patterns in BIA schools, namely: interest in school begins dropping by fourth grade, there are motivation problems by sixth grade, and a 20 to 30 percent drop-out rate by eighth grade.

The goal of the development effort was to be a test of English proficiency which assessed skills in both production and perception of English, and which would be "culture fair." On the basis of potential content validity various techniques were suggested to be used in eliciting production and perception responses exhibiting those skills considered necessary for speaking and understanding English.

The following techniques were evaluated as to how well they could assess English production: description of pictures to a rater, reading a paragraph, telling a story suggested by a series of pictures, role playing, interviewing, description of an object presented for manipulation, imitation of given sentences, transformation of given sentences into their corresponding passives or negatives, word association following direction, and self-ratings. From these techniques, picture description, repetition and transformation of given sentences were selected for field testing.

It was decided to examine the perception of English by using both written and auditory (spoken) stimuli. Techniques considered for use in written form included: question and short answer, sentence completion, combining two simple sentences into a complex one, breaking a complex sentence into two simple ones, selecting transformations of a given sentence, and correctly ordering sentences presented in scrambled form. The format finally chosen for field testing of written perception consisted of multiple choice items of the short answer and sentence completion type. The items for the written form were to be written to completely cover a list of grammatical categories selected by linguists as being basic to communication in English.

Techniques considered for use in spoken form for examining perception of English were: distinguishing minimal phonetic pairs, identifying a picture described by a test sentence, inferring where a presented conversation took place, and recalling information presented in a conversation. All of these except minimal pair discrimination were selected for field testing.

It was also decided that, along with field testing of techniques, external criteria adequacy and validity studies should be carried out. Field testing attempted to find out (1) what kinds of things people respond to and (2) what kinds of things yield responses that have a varying range. For external criteria adequacy, other measures that might show English ability, i.e., achievement test scores, IQ scores, attendance records, grades, reading rates, teacher ratings and self-image ratings, were suggested. External criteria adequacy studies were necessary to answer the question how well do these other measures reflect knowledge of English. Measures finally selected were grades, teacher ratings and achievement test scores. Validity studies were then necessary to find what, if any, correlation existed between scores from the new techniques and ratings from the external criteria.

Field testing of the selected new techniques was carried out both in BIA schools with native speakers of Amerindian languages, and in Los Angeles schools with native speakers of English. Not only the target grades, four, five and six, but also grades three and seven were tested, to provide bracketting information about proficiency. At the end of the first year techniques had been validated through field testing, and through studies to determine correlations of test scores within each of the prospective techniques. A summary of the figures from the correlation studies has been given in Table 3.

Once techniques had been validated, it remained to improve the consistency of the individual test sections by subjecting each technique to item analysis for item validation. Schools participating in item validation studies in Fall 1969 and Spring 1970 are listed in Appendix I. The written items for the English structure section, were validated in two ways, against total test score and against a subcriterion score. The subcriterion score was the number correct on 16 items selected on the basis of relatively high discrimination scores among Amerindian children speaking English as a first language. Table 12 provides a listing of the categorization of the subcriterion items, and the difference in discrimination power among the two groups. The discrimination scores using total test scores and subcriterion scores were combined with item difficulty data to produce indices of item validity and item reliability, using the formulas: i_r = index of reliability = $r_{g\,t}\ s_g$; i_v = index of validity = $r_{g\,c}\ s_g$; where $r_{g\,t}$ is the correlation of item score with total test score, $r_{g\,c}$ is the correlation of item score with subcriterion score and s_g is the item standard deviation, equal to $\sqrt{pg}$.

The indices of validity and reliability were used in item selection following a technique outlined by Gulliksen (1950, p. 383), in which items are chosen on the basis of high index of validity and the ratio of ir/iv.

In setting up the two parallel forms of the English structure section, items were paired according to both their index of validity and index of reliability, so that for every item assigned to Form A there was an equally valid and reliable item assigned to Form B. From 256 items representing the 86 grammatical categories initially chosen as essential to proficiency in English 124 items representing 29 grammatical categories were finally selected.

TABLE 12

Categorization of Subcriterial Items

Verb: Auxiliary, replacive, "are too"	.25
Conjunction: Subordinate, "so"	.25
Modifier: Comparative, "different from"	.24
Nominal: Derived noun, "friendship"	.22
Conjunction: Subordinate, "so"	.22
Modifier: Comparative, "the more. . .the. . ."	.21
Modifier: Comparative, "the more. . .the. . ."	.19
Verb: Auxiliary, replacive, "do so"	.17
Modifier: Negative word order, "did not"	.17
Verb: Separable, "write down"	.16
Conjunction: Subordinate, "wish that"	.16
Modifier: Comparative, "as. . .as. . ."	.14
Nominal: Possessive pronoun, "you. . .your"	.13
Nominal: Relative pronoun, "place. . .where"	.12
Verb: Agreement with adverb, "before. . .ing"	.12
Modifier: Comparative	.11
Median $\emptyset_1 - \emptyset_2$	.17
Mean $\emptyset_1 - \emptyset_2$	.18

The listening comprehension items were validated in two separate sections: a picture section and a conversation section. Picture items were selected on the basis of item correlation with total score on the picture section. Conversation items were selected on the basis of item correlation with total score on the conversation section. Of 19 picture items, 14 were selected; of 23 conversation items, 16 were selected for inclusion in the final LC section which contains both picture and conversation items.

The present scoring system for the Oral Production makes adequate description of the target picture a requirement for accepting the response for scoring. Once the response is judged by the examiner to be an adequate description of the target picture, it is then evaluated for grammatical correctness. For each item one or two grammatical aspects have been selected for evaluation, and correctness is determined for these aspects only. Making adequate description a preliminary criterion, and picking the particular grammatical aspects to be scored for each item were the final result of several stages of development.

In the initial stages, all responses were tape recorded and analyzed later. The first scoring system rated plus or minus on four factors : intelligibility--whether the response could be understood; description--whether the response adequately described the target picture; grammaticality--whether there were any grammatical errors in the response; vocabulary--whether there were any vocabulary errors. Sub-scores on these factors were included in the correlation study of techniques and criteria. Results from the study showed that only description and grammaticality were consistently positively correlated with other measures of English proficiency. The correlations were strongest with grammaticality. As a result, in the second stage of the development of a scoring system for the OP section, an expanded classificatory system was worked out which allowed errors to be broken down into four categories: grammar, pronunciation, description and vocabulary. The description and vocabulary categories were not further broken down, the grammar category was divided into errors concerning nouns, errors concerning verbs, and errors of complexity. Errors concerning nouns were further divided as number, gender, absence of noun, determiner and other. Errors concerning verbs were further divided into errors of number, absence of verb, tense and prepositions. Errors in complexity were those where the two required ideas were combined through simple conjunction (using "and"), were given in two simple sentences, or were coupled with "when". Pronunciation errors were broken into errors concerning consonants, vowels and errors of fluency. Fluency was defined as starting the response again, two or more times. The matrix used is given in Table 13.

TABLE 13

Grammar										Pronunciation			Description	Vocabulary
Nouns				Verbs				Complexity						
Number	Absence	Determiner	Preposition	Number	Absence	Tense	Preposition	Simple conj.	Simple sentences	Conj. with "when"	Vowels	Consonants	Fluency	

Five hundred children were tape recorded taking the OP test in Fall 1970. The tapes were returned and scored using the matrix. The results were submitted for standard item analysis. On the basis of the results it was decided to make adequate description an absolute criterion for accepting a response for further evaluation. Once a response is accepted as being adequately descriptive, it is evaluated only as to whether it contains what was the most powerfully discriminating error for that set of pictures. The last eight pictures, are scored for complexity, in addition to the category selected by the item analysis procedure. After the errors to be scored were selected, they were weighted from one to four points per item. The weights were assigned on the basis of the biserial correlation coefficient of item score with OP test score. The biserial correlation was computed on only the top and bottom 27 percent of each group, with the middle 46 percent of each group omitted.

Because of the weighting of the items, the score on the OP section is not a straight linear function of the number of items on which no error was made. Since standard formulas giving estimates of test reliability require that score be a linear function of number of items answered correctly, and since the question of scorer reliability arises with a test of production, the reliability figure reported for the OP section does not have the same meaning, as the figure for the ES and LC sections. In an attempt to account for both internal consistency and scorer reliability, the geometric mean of an internal consistency estimate (KR-20) and a scorer reliability figure (product-moment) was taken. The KR-20 estimate is .728 the figure from the rater reliability study is .755. Their geometric mean, .74, was used to compute the SE_m for the OP section.

The KR-20 formula was used as the source for the internal consistency figure used to calculate the geometric mean, even though one of the assumptions for the use of KR-20 (linearity of score and number of items correct) was violated. An estimate of the magnitude of error resulting from this violation must be attempted. Gullicksen (1950, p. 326) gives a formula developed by Wicks which approximates the mean value of the correlation between two weighted composites, $R_{x_V \cdot x_W} = 1 - \frac{1}{2\bar{r}K}\left[\left(\frac{S_V}{M_V}\right)^2 + \left(\frac{S_W}{M_W}\right)^2\right] \bar{R}_{x_V \cdot x_W}$ is the mean value of the correlation between the weighted composites, $\bar{r}$ is the average intercorrelation between the variables being combined, $\frac{\Sigma r_{gh}}{n}$. K is the number of variables being combined. M_V and M_W are the means of the two systems weights, and S_V and S_W are the standard deviations of the two systems of weights. For the unweighted case $M_V = 1$ and $S_V = 0$. If both are unweighted $\bar{R}$ becomes 1. The question is how much does the set of weights used with the OP section change this value. The mean of the OP weights is 2.86 and the SD is 3.06. So with the OP weights $\bar{R}$ becomes $1 - \frac{1.14}{2\bar{r}K}$. Since there are 21 items, this becomes $1 - \frac{.027}{\bar{r}}$. Even if $\bar{r}$ were as low as 0.3, $\bar{R}$ would still be 1 - .09 or .91.

The inter-rater reliability figure is based on the correlation of total scores on the OP section. Four judges rated each of five subjects twice, and four judges rated each of ten subjects once, for a total of 200 pairs of ratings. The resultant figure of .755 thus reflects both inter and intra-judge reliability.

Test Inter-Correlation

Inter-correlations among parts of the test are as given in Table 14.

TABLE 14

Inter-Correlations of Sections of TOPESL

GROUP	ES/LC	ES/OP	LC/OP
Choctaw	.71	.45	.47
Eskimo	.56	.51	.40
Hopi	.55	.53	.42
Navajo	.53	.51	.43
Combined groups	.56	.50	.43

Parallel Forms Data

Five hundred and two students took both Forms A and B of the ES section. All groups took the second form within five days of taking the first. Exactly half had Form A first and half had Form B first. The correlation with A first, $r_{A\,B}$ was .890, the correlation with B first, $r_{B\,A}$ was .900. Mean raw score on Form A 35.4, Form B 34.8. Standard deviation of Form A was 13.7, the standard deviation of Form B, 13.3.

Combined Scores for Forms A and B of the ES Section

A preliminary sample of 538 persons, of whom 269 took Form A, and 269 Form B, was drawn to determine if the population mean for Form A was different than Form B. The means, SD's and critical ratios for the sample were as follows:

	M	SD
Form A	34.84	16.28
Form B	33.70	15.80
Difference	1.14	.48
Critical Ratio	.83	.49
Probability	.40	.60

On the basis of this sample it was concluded that the population means and SD's for Form A and B were not different. This conclusion was born out by correlation information on the total norms sample of 6,771. The correlation of ES score with form was + .003.

Speededness

Speededness data were collected only for the ES section of TOPESL as a format for the LC and OP sections precludes any strong speededness effects. Percentages of persons reaching item 46 (3/4 finished), and 62 (end of test) are indicated in Table 15. Figures are based on the item analysis sample of 795 persons.

TABLE 15

	% Reaching Item Number			
	Form A		Form B	
Group	#46	#62	#46	#62
Choctaw	.47	.31	.64	.33
Eskimo	.89	.68	.88	.74
Hopi	.98	.94	.98	.93
Navajo	.80	.66	.83	.55
Combined groups	.81	.66	.84	.62

Item Statistics

Item statistics based on the item analysis sample for combined groups are presented in Tables 16 and 17. Reported are p, p', r_{pb}, and item categorization for each item on the written test. Tables 18 and 19 give p and p' for individual language groups.

Research with TOPESL

Subsidiary information collected during the norming administration included data on school size, school accessibility, English contact, sex differences, and grade and age phenomena. Correlations of English contact with scores, and of school size with scores given in Section II of the manual, in Tables 3 and 10.

No significant correlations were found for accessibility. Sex data are available for the Navajos only. These are reported in Table 16.

The relative influence of grade and age on section scores can be seen in Table 17. Though there is a positive correlation between both age and grade, when grade is partialed out of the age-score correlations, they become strongly negative, indicating that within the same grade, older children tend not to do as well as younger ones.

TABLE 16

Correlation of Sex and Section Scores for Navajo Students

	ES			LC			OP		
Grade	r	SD	N	r	SD	N	r	SD	N
4	.16**	12.2	1,497	$.03^{ns}$	5.0	1,483	.13**	13.2	475
5	.18**	13.1	1,339	$.06^{ns}$	5.7	1,327	$.05^{ns}$	11.4	440
6	.15**	13.1	1,302	$-.03^{ns}$	4.9	1,300	.11*	10.7	418

TABLE 17

Correlations of Age, Grade and Age--Grade Partialed Out With TOPESL Section Scores

Choctaw 4,5,6	ES	LC	OP	M	SD
Age	.26	.12	.32	11.0	1.3
Grade	.50	.04	.51	4.9	.9
Age (Grade Out)	-.17	-.12	-.07		
Eskimo 4,5,6					
Age	-.04	.01	-.23	11.0	1.3
Grade	.36	.23	.11	4.9	.8
Age (Grade Out)	-.41	-.20	-.42		
Hopi 4,5,6					
Age	.10	.21	.08	10.7	1.2
Grade	.27	.35	.31	5.0	.9
Age (Grade Out)	-.18	-.13	-.28		
Navajo 4					
Age (Grade Out)	-.04	-.02	-.06	10.4	1.0
Navajo 5					
Age (Grade Out)	-.09	-.07	-.13	11.4	.9
Navajo 6					
Age (Grade Out)	-.17	-.15	-.25	12.4	.9

APPENDIX I

BIA Schools

Barrow Day School
Barrow, Alaska
F 68, Sp 69, F 69

Choctaw Central School
Philadelphia, Mississippi
F 68, Sp 69, F 69

Hopi Day School
Oraibi, Arizona
F 68, Sp 69, Sp 70

Many Farms Elementary (Navajo)
Chinle, Arizona
F 69

Salt River Day School (Pima)
Salt River, Arizona
Su 68

Chinle Boarding School
Chinle, Arizona
F 69, Sp 70

Chuska Boarding School (Navajo)
Tohatchi, New Mexico
Sp 69

Leupp Boarding School (Navajo)
Leupp, Arizona
F 69

Oglala Community School
Pine Ridge, South Dakota
F 68, Sp 69

Los Angeles Schools

Beethoven Street School
Los Angeles, California
Su 69

Richland Avenue School
Los Angeles, California
Su 68

Harrison Street School
Los Angeles, California
Su 68

San Jose Street School
Los Angeles, California
Sp 68

F = Fall Sp = Spring Su = Summer

APPENDIX II

CHOCTAW

Mississippi

Conehatta Boarding School
Conehatta, Mississippi 39057

Choctaw Central Boarding School
Philadelphia, Mississippi 39350

ESKIMO

Alaska

Akiachak Day School
Akiachak, Alaska 99551

Barrow Day School
Barrow, Alaska 99723

Brevig Mission Day School
Brevig Mission, Alaska 99785

Chevak Day School
Chevak, Alaska 99563

Chifornak Day School
Chifornak, Alaska 99561

Elim Day School
Elim, Alaska 99739

Gambell Day School
Gambell, Alaska 99742

Golovin Day School
Golovin, Alaska 99762

Hooper Bay Day School
Hooper Bay, Alaska 99604

Kalskag Day School
Kalskag, Alaska 99607

Kasigluk Day School
Kasigluk, Alaska 99609

Kiana Day School
Kiana, Alaska 99749

Kotlik Day School
Kotlik, Alaska 99620

Kotzebue Day School
Kotzebue, Alaska 99752

Mountain Village Day School
Mountain Village, Alaska 99632

Napakiak Day School
Napakiak, Alaska 99634

Nunapitchuk Day School
Nunapitchuk, Alaska 99641

St. Michael Day School
St. Michael, Alaska 99769

Savoonga Day School
Savoonga, Alaska 99769

Shaktoolik Day School
Shaktoolik, Alaska 99771

Stebbins Day School
Stebbins, Alaska 99671

Tuntutuliak Day School
Tuntutuliak, Alaska 99680

Unalakleet Day School
Unalakleet, Alaska 99684

APPENDIX II (cont.)

HOPI

Arizona

Hopi Day School
Oraibi, Arizona 86039

Polacca Day School
Polacca, Arizona 86042

Second Mesa Day School
Second Mesa, Arizona 86043

NAVAJO

Arizona

Chinle Boarding School
Chinle, Arizona 86503

Chrystal Boarding School
Fort Defiance, Arizona 87504

Denehotso Boarding School
Kayenta, Arizona 86033

Dilcon Boarding School
Winslow, Arizona 86047

Greasewood Boarding School
Ganado, Arizona 86505

Kaibeto Boarding School
Tonalea, Arizona 86044

Kayenta Boarding School
Kayenta, Arizona 86033

Leupp Boarding School
Leupp, Arizona 86035

Lukachukai Boarding School
Lukachukai, Arizona 86503

Many Farms Elementary School
Chinle, Arizona 86503

New Cottonwood Boarding School
Chinle, Arizona 86503

Red Lake Boarding School
Tonalea, Arizona 86044

Shonto Boarding School
Tonalea, Arizona 86044

Teecnospos Boarding School
Teecnospos, Arizona 86514

Toyei Boarding School
Ganado, Arizona 86505

Tuba City Boarding School
Tuba City, Arizona 85045

New Mexico

Chuska Boarding School
Tohatchi, N. Mex. 87325

Crownpoint Boarding School
Crownpoint, N. Mex. 87313

Dzilth-Na-O-Dith-hle
Bloomfield, N. Mex. 87413

Nenahnezad Boarding School
Fruitland, N. Mex. 87301

APPENDIX II (cont.)

NAVAJO

New Mexico

Sanostee Boarding School
Little Water, N. Mex. 87420

Shiprock Boarding School
Shiprock, N. Mex. 87420

Toadlena Boarding School
Toadlena, N. Mex. 87324

Tohatchi Boarding School
Tohatchi, N. Mex. 87325

Wingate Elementary School
Fort Wingate, N. Mex. 87316

Utah

Aneth Boarding School
Aneth, Utah 84510